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Modeling the Individual Enlistment Decision: Final Study Report

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FOR THE U.S. ARMY RESEARCH INSTITUTE (ARI)**

MODELING THE INDIVIDUAL ENLISTMENT DECISION

FINAL STUDY REPORT

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FOREWORD

Data from the Youth Attitude Tracking Study (YATS) reveal a decline in young people's propensity to enlist, prompting concerns about meeting enlistment goals. The impact of this decline depends on the extent to which it occurs among high quality segment of the youth population. The ability to segment the population based on YATS data is limited; improved methods for segmentation could improve the Army's ability to predict the impact of changes in enlistment propensity on the difficulty of meeting enlistment goals. In addition, a better understanding of the process by which a youth decides to enlist in the military services can improve prediction and help the Army to develop and evaluate recruiting strategies.

This report describes an effort to meet some of the needs described above. In this effort, YATS data were analyzed to identify items that might be used to supplement current propensity variables. A telephone-administered aptitude test was pilot tested and produced scores that correlated well with Armed Forces Qualification Test (AFQT) scores. Interviews were conducted with recruits in the Delayed Entry Program (DEP) and focus groups of male adolescents and parents were conducted to improve understanding of their decision-making processes and perceptions of military careers. Based on this information, a final survey was developed for testing in a later phase of this project. When validated, this survey will provide both more accurate segmentation of the youth population and improved prediction of enlistment behaviors.

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Early phases of this project were directed by Dr. Dickie A. Harris, until his sudden death in December 1996. We are grateful for the leadership and guidance he provided to this effort.

The authors would like to thank the following people for contributing to this report: Mary Ann Statman and Jennifer Naughton helped to review the literature and to identify the common YATS items that were addressed in our analysis. Ani DiFazio merged the YATS and MEPCOM data files, ensured accuracy and consistency of the variable definition, and conducted statistical analyses. Peter Ramsberger prepared the OMB clearance package, and Carolyn Harris prepared the protocol for the DEP interviews. Paul Hogan provided an analysis of recruiting issues from an economic viewpoint. Finally, we wish to acknowledge all who conducted the DEP and telephone interviews, and focus groups.

MODELING THE INDIVIDUAL ENLISTMENT DECISION: FINAL STUDY REPORT

EXECUTIVE SUMMARY

Research Requirement:

Since the transition to an All-Volunteer Force in 1973, the Military Services have instituted the Gilbert Youth Studies and Youth Attitude Tracking Study (YATS) to provide information to aid the Services' efforts to attract the number and quality of people needed for staffing. YATS results show that there is a declining propensity among youth to enlist and suggest a need for greater attention to the Services' recruiting mission. Although YATS provides some information for interpreting trends in enlistment propensity, additional measures are needed to help analysts and policy makers determine in which segments propensity has declined and how this affects the quality and number of enlistees. The purpose of this project was to develop new measures of enlistment propensity and mental quality to provide the Army with more accurate indications of trends in the youth population that influence propensity. This will enable the Army to better segment the youth population for recruiting purposes.

Procedure:

YATS data from 1988 through 1994 administrations was analyzed to determine which additional items might contribute predictive power to the composite active propensity variable currently in use. Existing career decision models, surveys, databases, and measures of aptitude were reviewed to aid in the development of new measures to be incorporated into the survey produced in this effort. A newly developed telephone-administered aptitude test was pilot tested and its results were correlated with Armed Forces Qualification Test (AFQT) scores. Interviews were conducted with recruits in the Delayed Entry Program (DEP) to better understand their career decision-making influences and processes. Focus groups of male adolescents and parents of male adolescents were conducted to improve understanding of their decision-making processes and perceptions of military careers.

Findings:

YATS and Military Entrance Processing Command (MEPCOM) data supported the importance of recruiter contact, advertising, education level, and aptitude in predicting enlistment behavior. Reviews of career decision models and current surveys and databases, interviews with DEP recruits, and focus groups with adolescents and parents yielded an expanded list of specific factors which were used to improve the measurement of enlistment propensity. The brief telephone-administered aptitude test was significantly correlated with currently used cognitive ability tests, and results supported its use and further development. Based on information from this research, a final survey was developed to be used in Phase II of this study.

Use of Findings:

In recruiting, the ultimate market is that segment of the American population that is qualified, available, and interested in military service. The final survey developed in this study will be used in Phase II to collect information which will increase the level of understanding of these three factors and thereby help recruiters and advertisers become more efficient and effective. The ultimate goal is to ensure that the recruiting commands are successful in meeting their objective for sustaining the Military Services with the appropriate personnel.

MODELING THE INDIVIDUAL ENLISTMENT DECISION: FINAL STUDY REPORT

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INTRODUCTION

The end of the draft in 1973 and the shift to an All-Volunteer Force emphasized the crucial role of the recruiting process in attracting the number and quality of people desired by the Military Services. In response to the recruiting needs, the Army initiated VOLAR (Volunteer Army) to make changes in Army life and boost the Army's image in order to attract the desired recruits. The Military Services also instituted the Gilbert Youth Surveys and the Youth Attitude Tracking Study (YATS) to provide them information about youth that could aid the recruiting effort. Managed by the Department of Defense and supported by the Services, YATS is conducted annually with the aim of measuring enlistment propensity, knowledge of enlistment offerings, recruiting and advertising awareness, and other selected topics. Propensity is the stated intention of youth to enlist in the military in the next few years.

During the last quarter of the century, recruiting has faced various challenges. YATS results show declining propensity, particularly among minority youth. Despite the drawdown, and to some extent because of it, recruiting is far from easy. Anecdotal evidence suggests that youth are reacting to the smaller military with a decrease in enlistment because they perceive that the military is no longer hiring and that a military career is far from secure. Also, a smaller cadre of soldiers are called to participate in traditional and non-traditional missions. Public awareness of operations in Panama, the Gulf War, Bosnia, and Haiti, as well as the risks of routine combat training, highlight the dangers of service and weigh on the minds of youth and their parents.

Although YATS provides some information that can be used to interpret trends in enlistment propensity, supplemental measures could help the analyst or policy maker determine whether changes in propensity are occurring among the qualified and available youth that represent the primary recruiting market, or whether they are occurring among other segments of the population. In addition, refined measures of propensity can provide a more sensitive and accurate indication of trends in the youth population, based on a more thorough understanding of the career decision process. For this reason, the Army Research Institute (ARI) is interested in investigating additional propensity and aptitude measures to augment those currently available in YATS.

Project Goals

To keep up with the youth career decision-making process, the Army wants a better understanding of enlistment propensity and how recruiting and advertising can positively influence the decisions of youth in the most desired groups. The three goals of this research are:

1. To refine enlistment propensity measures to increase their accuracy,
2. To develop improved measures of constructs to segment the youth population, and
3. To increase understanding of factors affecting the enlistment decision process.

Although the value of the current propensity measure is not trivial (individuals with the greatest self-reported propensity in the YATS have a .33 probability of enlisting, while those with the lowest propensity have a .06 probability), it seems reasonable that the predictive power of the

propensity scale could be substantially improved. An enhanced propensity measure could consider such factors as temperament, career interests, self-efficacy, and knowledge of the military assessment items to estimate enlistment propensity. To support the goal of improved prediction of enlistment behaviors, we explored these factors.

In examining YATS data, it is essential that there be some means of categorizing youth on the two dimensions that are the primary measures of recruit quality--high school graduation status and aptitude. These two characteristics, in combination, form the main basis for deciding whether or not an individual is qualified to enter the military. Over the years, many studies have demonstrated that young people who complete high school are more likely to serve effectively and complete their enlistment term than those who do not. Similarly, research has shown that individuals who score in the upper ranges of the Armed Forces Qualification Test (AFQT) are more effective soldiers, sailors, airmen, and marines. Thus, it is not enough to know the overall propensity rate for youth in general. What is of equal if not greater importance is the level of interest in military service among that segment of the youth population who have been found to be best qualified to serve.

In the past, YATS data have been used to segment the population so as to delineate those of higher and lower quality. The survey includes several questions related to education that allow for a straightforward determination of respondents' status in this regard. The assessment of aptitude, however, has been less easily accomplished. YATS ascertains such estimates indirectly via demographics (age, race/ethnicity, geographic region) and school attendance and achievement patterns (e.g., math courses taken and grades) (Orvis & Gahart, 1989). Such predictors are used to estimate standing on the AFQT-- either in the upper (at or above the 50th percentile) or lower end of the distribution.

Unfortunately, the validity of YATS in this regard has declined over the years, and estimation of the relationship between cognitive ability and enlistment intention could stand improvement. The data regarding ability have declined in utility, in that derived estimates of the upper half of the aptitude distribution exceed 60 percent. Problems with existing YATS estimates highlight the importance of an alternative, psychologically-based approach to assessing quality within a national probability sample of youth. In addition, the Army is interested in segmenting the market into more than the current two broad categories in order to increase precision in identifying habits and behaviors of relatively high cognitive ability youth. Such improvement holds implications for directions in marketing and advertising, which the Army can use to protect and enhance its base of recruits for the future.

Our ability to predict the likelihood that youth will enlist in the military services can be enhanced by a more thorough understanding of the process by which they make a choice from the career paths available to them. YATS includes questions about the characteristics of a job that may be important determinants of career preferences. This information can be augmented with knowledge of youth perceptions of career paths, and decision strategies used to evaluate different career options.

This report describes the results of the first phase of this effort to model the enlistment decision. The activities conducted in this phase support the three goals described above. To

support the goal to predict enlistment behavior, we analyzed items common to several years of YATS to determine how well these items could predict who would apply for enlistment, and who would actually enlist for military service. From this analysis, and from published analyses of other surveys, we identified items that might be incorporated in a survey that assesses enlistment propensity. To address the goal of segmenting the market, we modified an existing aptitude test for presentation in a computer-assisted telephone interview (CATI) format. We presented this test to Army recruits in the Delayed Entry Program (DEP) to establish its validity. To support the goal of understanding the career decision process, we conducted interviews with recruits in the DEP, and focus groups with Washington DC area youth and parents.

The culmination of this phase was the development of a survey that includes items that measure propensity with items that segment the market. This survey is designed for CATI presentation, either as a stand-alone instrument, or as a part of a YATS administration. As a part of this development, we produced justification materials for OMB clearance.

In Phase II, the survey instrument developed in Phase I will be administered to a longitudinal sample of youth. The survey data will be analyzed to test alternative enlistment decision models. The research on the enlistment decision process will continue with additional focus groups. The results will inform recommendations on how the Army can favorably influence the decision processes of potential recruits. Phase III will extend and complete the recommendations after a follow-up administration of the measures to the longitudinal sample, subsequent analyses of the data, and extension and validation of the enlistment decision model.

Organization of This Report

This report describes the activities conducted in Phase I and presents their results. The description begins with an analysis of items that were included in YATS over several years to determine which of them can predict enlistment behaviors. The discussion continues with a review of decision models, surveys, databases, and aptitude assessments relevant to enlistment. The next two sections describe two Phase I data collection activities, analyses, and results: interviews with Delayed Entry Program enlistees, and focus group research with youths and parents. The final survey recommendations, including item selection, survey development, and the OMB clearance package, are described in the following section. The last section summarizes the research results, discusses related issues, and presents plans for Phase II of this project..

YOUTH ATTITUDE TRACKING STUDY (YATS) REVIEW

The purpose of this review of YATS was to determine whether items included in it could contribute additional meaningful predictive power to the composite active propensity variable which is now being used. Currently, the primary tool for predicting propensity to enlist in the military has been the composite active propensity variable constructed from some YATS items. The value for the composite active propensity variable is the "most positive response to the four Service-specific propensity (Active Duty) questions (i.e., minimum value of Q510, Q511, Q512, Q513)" (Wilson, Greenlees, Kirkman, & Baker, 1997, p. A-7). The question asked of each respondent is "How likely is it that you will be serving on active duty in the [Army, Navy, Air Force, Marine Corps]?"¹ As Wilson et al. reported,

Those who say they will 'definitely' or 'probably' be serving on active duty are counted as having 'positive' propensity for the Service named. Those who say they will 'probably not' or 'definitely not' be on active duty, together with those respondents who say they 'don't know' or refuse to answer the question, are counted as having 'negative' propensity (p. 3-1).

Although the value of the current YATS propensity variable is not trivial for predicting military applications and enlistments, more needs to be understood about how other YATS items could contribute to the ability to predict propensity to enlist. We analyzed items common to several years of YATS data collection to determine how well the items can predict application and enlistment into the military. From this analysis of available data we identified currently used items that are useful for predicting propensity and that should be included in a new, expanded survey to assess enlistment propensity. This chapter describes the results of analyses conducted on YATS data. In these analyses, YATS items which were significantly related to respondents' interest in the military, their application to the military, and their enlistment were identified.

Data

The database used to conduct these analyses was created by merging the YATS database with data from the Military Entrance Processing Command (MEPCOM). The YATS database provided information on respondents from a national probability sample representing American youth. The MEPCOM data provided information on individuals who had begun processing for application for enlistment into the military. The master data file for these analyses in this study was an amalgamation of YATS data from the fall administration for the years 1988 through 1994. As shown in Table 1, a total of 54,405 records were provided on the YATS files. One of our primary goals, however, was to evaluate the application and enlistment behavior of these individuals. Therefore, it was imperative that the YATS respondents provided a social security number (SSN) to facilitate a match to data from MEPCOM (bearing in mind that those who supplied their SSN may be different from those who did not).

¹Respondents are asked this question for each armed Service (including the Coast Guard), but only the responses to the four active military Services are considered when calculating the composite active propensity score (Wilson et al., 1997).

Table 1 shows that 28,171 respondents provided SSN data. This figure, however, does not represent the number of individuals who were *eligible* to apply to the military. It would seem that the difference between the total number of YATS observations ($n = 54,405$) and the number of respondents who provided SSN information ($n = 28,171$)—that is, $n = 26,235$ —would represent the number of YATS respondents who did not provide SSN data. However, although there are 28,171 MEPS observations with SSN data, there are 29,400 YATS observations that were successfully matched to the MEPCOM data. This anomaly arose because there were approximately 1,700 cases (amounting to nearly 3,600 records) in the 1988 and 1989 YATS that were interviewed more than once within the same administration year (there was sampling with replacement in those years; Dr. Jerome Lehnus, personal communication, April, 1996). Therefore, there are $29,400 - 28,171 = 1,229$ MEPS observations that describe 3,594 YATS records, or 1,730 individuals.

Table 1
Number of Respondents in the YATS and MEPCOM Data Files

Year	YATS Survey	MEPCOM Match Data	Percent
1988	10,887	6,210	57.0
1989	11,519	7,370	64.0
1990	9,797	4,499	45.9
1991	4,893	2,444	49.9
1992	5,574	2,576	46.2
1993	5,201	1,840	35.3
1994	6,534	3,232	49.5
TOTAL	54,405	28,171	51.8

There were two options for handling the MEPCOM-match anomaly. One approach was to delete the duplicate cases on the YATS side. The duplicate cases were considered *bona fide* selections by the sampling statisticians, however, so deletion was deemed inadvisable. The second approach (the one adopted) was to add duplicate observations to the MEPS data, resulting in $28,171 + (3,495 - 1,730) = 30,035$ MEPS observations. Of these, 29,400 were matched to YATS surveys. Therefore, 29,400 observations were identified as eligible to apply for military enlistment.

A number of anomalies were found in the YATS data file which could cause the resulting YATS/MEPCOM "match file" to be somewhat inaccurate. These problems are delineated below.

- When creating the YATS database, DMDC did not construct flag variables indicating whether a person was an applicant and/or an enlistee. Rather, matches were attempted to three data sources (MEPCOM, MASTER, and LOSS). Most of the time, observations that either were not found in the search or had missing data were encoded a value of "64" for some or all variables. In addition to the fact that this could lead to some muddly operational definitions of who were applicants or enlistees, some variables with valid codes of "64"

(e.g., Interservice Separation Code) also seem to have been coded with "64" to indicate the lack of a match, so that our ability to differentiate valid from missing data may be impaired in these cases.

- Many (but not all) MEPCOM variables are routinely overwritten as new information is obtained (Dr. Jerome Lehnus, personal communication, March, 1996). Pure applicant information is typically not overwritten, whereas most Master data generally are overwritten. Therefore, unknown, erroneous, or dated information may or may not be overwritten, depending on whether it is the type of field that is overwritten and, if so, whether the new information was obtained at the time our data were cut. Also, because of the practice of overwriting data, some variables do not have the same meaning from one observation to another; their meaning has to be assessed given values of other variables. For example, the variable designating one's entry date yields the date of accession if there was an enlistment, the date of application if an exam was taken, and the DEP date when there was an enlistment to DEP.
- Some MEPCOM variables have values encoded even when a variable does not apply to an observation. For example, applicants who do not enlist should not have non-missing accession variables (e.g., term of enlistment, service). In most of these cases, "0" was encoded for these variables, but valid data codes were assigned to other cases (e.g., 50 cases have a valid Service of Accession coded even though they are not listed as accessions).
- The variable indicating the "Latest Master Date" (i.e., the date the file was updated for active personnel and the date prior to loss for separated personnel) is valid for only 43 percent of the accessions. For the analysis data file, the last master date was October, 1995. Therefore, all accessions who enter the Services before that date should have a valid "Latest Master Date." It is unclear why so many accessions fail to have a valid value for this field.

Method

The statistical method chosen for analysis of youth propensity was hierarchical logistic regression, performed by the LOGISTIC procedure in SAS 6.10 for Windows. PROC LOGISTIC uses maximum likelihood estimation to derive model parameters. Blocks of independent variables were identified and entered in a predetermined order, with the incremental fit of the regression model examined at each step.

Model Fit

The fit of the logistic regression models was expressed in the form of a likelihood ratio test. Formally, the value reported by PROC LOGISTIC is

$$-2\log(L0/L1) = (-2\log L0) - (-2\log L1) = -2(\log L0 - \log L1) \quad (1)$$

where $L1$ is the value of the likelihood function for the model under consideration and $L0$ is the corresponding value for a model where all regression parameters except the intercept are set to

zero.² This log likelihood statistic is asymptotically distributed as χ^2 under the null hypothesis, with degrees of freedom equal to the number of predictors in the model. PROC LOGISTIC provides a value of the χ^2 statistic for each model.

To test a set of predictors for incremental fit, one simply computes the difference between the model-specific values of $-2 \log L$:

$$-2\log(L1/L2) = (-2\log L1) - (-2\log L2) = -2(\log L1 - \log L2) \quad (2)$$

where $L1$ is the value of the likelihood function for the original model and $L2$ is the corresponding value for the expanded model (i.e., the model containing the additional predictors). This difference is also asymptotically distributed χ^2 , with degrees of freedom equal to the number of predictors that were added to the original model.

Base Rates

The ability to make accurate predictions depends in part on the base rate of the event under study. The base rates for the events of interest in these analyses were rather low in most instances. As will be shown, however, analyses that required complete data on a rather restrictive set of variables resulted in higher base rates for the criterion behavior, thus increasing the potential for demonstrating adequate predictive power.

Strength of Association. Several indices of the strength of association between a predictor and the dependent variable are available from PROC LOGISTIC. The two of primary interest are the standardized regression coefficient and the odds ratio. As in linear regression, the standardized estimate allows more direct comparison of the effects of predictors, because it removes differences of scale across the variables. The odds ratio gives the ratio of the odds of the event for each unit increase in the unstandardized coefficient. For example, an odds ratio of 2.0 indicates that a one-unit increase in the predictor would result in the odds of occurrence for the event in question to be twice as high as it would have been. When the predictor is a dichotomous variable, this value is an index of the ratio of odds for the two groups. For example, if males are coded "1" and females "0," the odds ratio of 2.0 would indicate that the odds of the event for males are twice the odds of the event for females.

The standardized regression coefficient was given preeminence when interpreting the propensity analyses, because the rather low base rates for the events in most of the samples could result in large odds ratios even when few individuals were implicated and the associated standardized regression coefficient was relatively small. For example, if there were few respondents who took calculus in high school and none of them enlisted, the odds ratio for the variable "Took/plans to take Calculus in high school" would be quite large when predicting enlistment behavior, even though the standardized coefficient for the variable might be rather small due to the small variance in the dichotomous predictor. The standardized estimate allows the differences in the variances of the independent variables to be taken into consideration.

²This is the same hypothesis that is tested with the overall F statistic in linear regression models (Aldrich & Nelson, 1984).

Dependent Variables

The Army's recruitment and enlistment process is dynamic. As individuals are processed through the system, they can change designation from one point to another. For example, one must apply to enlist before one can enlist, and many applicants do not enlist. Further, of those applicants who fail to enlist, some lose interest and drop out of consideration voluntarily, whereas others retain interest but are rejected by the Army. The analyses that follow recognize the dynamics of the enlistment decision process by including three dichotomous dependent variables: Apply/Not Apply, Enlist/Do Not Enlist, and Keep Interest/Lose Interest. These variables will be labeled according to their active designations (i.e., "Apply," "Enlist," and "Interest").

Apply. Applicants are those individuals who, after making contact with a recruiter, began the application and testing process for military enlistment. Operationally, this variable was defined as those individuals who had a valid value (i.e., a value other than "64") for two "applicant only" variables (i.e., those variables that are never overwritten by MEPCOM): (a) Earliest Applicant Date (year and month), and (b) Earliest Application Service. A total of 3,677 observations were identified (12.5 percent of the sample). The variable was coded such that "1 = Applied" and "0 = Did not apply."

Enlist. Enlistees were those who had signed a contract to enlist. This category included both those who had enlisted and shipped to their station and those who had enlisted but had not yet shipped. Using coding from the MEPCOM data, the operational definition for this variable was set to "1 = Enlisted" if the MEPCOM variable "Record ID" was coded "3" ($n = 1,256$) or if the individual was coded as having enlisted in the DEP ($n = 297$). Enlist was set to "0 = Did not enlist" otherwise. Therefore, a total of 1,553 enlistees were identified (5.3 percent of the sample). Of those who had applied, 42.2 percent did not enlist. Table 2 provides information on the reasons for why this percentage of applicants did not enlist.

Interest. As mentioned above, an applicant could fail to enlist in the Army for two reasons: (a) the applicant voluntarily terminated the enlistment process, or (b) the Army rejected the applicant. This variable is essentially the Enlist variable, except that those applicants who did not enlist because they were rejected by the Army (e.g., they were disqualified for medical or moral reasons) are coded as "1 = Kept interest" along with those who applied and enlisted.

Independent Variables and Missing Data

There were two primary sets of variables to use as predictors of the three dependent variables: variables obtained from the YATS and variables obtained from the MEPCOM files. Only those YATS variables common across the seven administration years (1988-1994) were considered. YATS variables included in the analyses are provided in Table 3. MEPCOM variables are provided in Table 4. Both tables contain set designations for the blocks of variables that entered the regressions together.

Table 2

Enlistment Status for Those Who Have Applied to the Military

Status	Number	Percentage
Enlisted	1256	34.3
Enlisted in DEP	297	8.1
Qualified, Not Yet Enlisted	22	0.6
Insufficient Exam Score	564	15.3
Temporary Medical Disqualification	9	0.2
Incomplete Medical Evaluation	28	0.8
Disqualified Medical	41	1.1
Moral Disqualification	4	0.1
Need to Retake Test to Verify Scores	13	0.4
Partially Qualified, Did Not Complete Process	1191	32.4
Incomplete Forms (Lost Interest)	249	6.8
Disqualified Due to Failing Retest	3	0.8
Total Applicants	3677	100.0

The logistic regression analyses required respondents to have complete data on all analysis variables. After removing cases with missing data on the YATS analysis variables, the total sample was reduced from 29,400 to 22,405. Of these, a total of 3,033 applied for enlistment (13.5 percent of the total sample); 1,763 maintained interest (7.9 percent of the total sample, 58.1 percent of the applicant sample); and 1,286 enlisted (5.7 percent of the total sample, 42.4 percent of the applicant sample).

Only those individuals who applied to the military have MEPCOM data. Therefore, the maximum sample size for analyses involving the MEPCOM variables was 3,033. Of these, a total of 126 individuals were missing data on one or more of the MEPCOM variables, thereby yielding an analysis sample of 2,907 respondents. Of these, a total of 1,710 maintained interest (58.8 percent) and 1,262 enlisted (43.4 percent).

Negative Propensity Youth. The analyses of propensity to enlist in the military also included a specific look at those youth with negative propensity to enlist. Analyses of this subgroup were performed because a large proportion of the enlistees actually report they have a negative propensity to enlist in the military. Of the 22,405 respondents in the analysis sample (i.e., those having complete data on the YATS analysis variables), 77.8 percent of them ($n = 17,438$) expressed a negative propensity toward military enlistment. Of the 3,033 respondents who applied for military enlistment, over half of them (53.4 percent, $n = 1,620$) expressed negative propensity. Further, nearly half (48.4 percent, $n = 623$) of the 1,286 enlistees in the analysis sample were negative propensity youth. The analyses of negative propensity youth were aimed at determining which variables distinguished the applicants and enlistees from those who failed to apply or enlist.

Table 3

Sets of Common YATS Variables Chosen for the Hierarchical Logistic Regression Analyses

Set 1: Mother's Education

- * Years of education: mother

Set 2: Propensity and Similar Variables

- * Composite active propensity
- * Unaided mention
- * Composite Reserve/National Guard propensity
- * Talked to a recruiter

Set 3: Slogan Recognition

- * Army1 slogan correct³
- * Army 2 slogan correct
- * Marine Corps slogan correct
- * Air Force slogan correct

Set 4: Education at YATS Administration

- * Enrolled in school
- * Average high school grades (interval median)
- * Took college preparation courses in high school
- * Took/plans to take Algebra I
- * Took/plans to take Plane Geometry
- * Took/plans to take Business Math
- * Took/plans to take Computer Science
- * Took/plans to take Algebra II
- * Took/plans to take Trigonometry
- * Took/plans to take Calculus
- * Took/plans to take Physics

Set 5: Work Status/Perceptions

- * Respondent is currently employed
 - * Difficulty for youth to get full-time job
 - * Looking for work
-

³ Variables involving recognition of the Navy slogans were not common across administration years and therefore not included.

Table 4

Sets of MEPCOM Variables Chosen for the Hierarchical Logistic Regression Analyses

Set 1: Demographics, Measures of Socioeconomic Status

- * Age
- * Black
- * Hispanic/Other
- * Male
- * [YATS Set 1]

Set 2: Aptitude (AFQT Category)

- * AFQT Category I or II⁴
- * AFQT Category III A
- * AFQT Category IV

Set 3: Education Level at Application

- * Less than high school education at application
- * Alternate degree/GED at application

Set 4: Military Application Demographics

- * Applied to Active Duty
- * Applied to military in 1981-1986
- * Applied to military in 1990-1995

Sets 5 - 8: YATS Sets 2 - 5

Caveat. Note that the MEPCOM data obtained for these analyses were current as of October, 1995. Therefore, a number of YATS respondents might not have had sufficient time to apply or enlist. As evidence of this trend, Tables 5 and 6 provide the number of individuals out of the total set of eligible respondents ($n = 29,400$) who applied/did not and enlisted/did not by year of YATS administration. The tables show a marked decrease in the incidence of applications and enlistments during the more recent YATS administrations. Because YATS respondents range from 18-24 years of age, a number of the respondents in our analysis sample might not have had sufficient time to apply or enlist. This is especially likely for the negative propensity youth, who would likely take longer to engage in these behaviors than their positive

⁴ The AFQT category variables are dummy coded such that the variable equals "1" if the variable applies to you and "0" if it does not. When there are c categories, one requires $c - 1$ dummy variables. The variable excluded in these analyses (i.e., the "reference dummy") is AFQT Category IIIB. Although there were a few AFQT Category Vs in the data set, based on analyses the coding for these individuals appears to be in error.

propensity counterparts. Such a difference in "time-to-action" between the two propensity groups would help explain why the majority of enlistments in our sample reported positive propensity. Typically, about half of the YATS respondents who enlist showed negative propensity when they participated in the YATS, due, in part, to the fact that negative propensity youth greatly outnumber those with positive propensity. Because a somewhat arbitrary cut point of October, 1995 has been established on what is a dynamic process, the number of respondents within the negative propensity group who applied or enlisted is likely attenuated for the more recent YATS administrations.

Table 5
Application Status of Respondents by Year of YATS Administration

Apply	1988	1989	1990	1991	1992	1993	1994	TOTAL
No	5,733	6,805	3,925	2,182	2,295	1,667	3,116	25,273
Yes	1,013	1,258	574	262	281	173	116	3,677
TOTAL	6,746	8,063	4,499	2,444	2,576	1,840	3,232	29,400

Table 6
Enlistment Status of Respondents by Year of YATS Administration

Enlist	1988	1989	1990	1991	1992	1993	1994	TOTAL
No	6,332	7,518	4,248	2,330	2,462	1,781	3,176	27,847
Yes	414	545	251	114	114	59	56	1,553
TOTAL	6,746	8,063	4,499	2,444	2,576	1,840	3,232	29,400

Models. Several hierarchical models were estimated for each of the three dependent variables. The models were run using two analysis samples (all respondents, negative propensity respondents) and two variable sets (YATS variables, all analysis variables). The two basic models were as follows:

DV = YATS variables (Sets 1-5)

DV = MEPCOM variables (Sets 1-4) + YATS variables (Sets 2-5)

The model containing MEPCOM variables was not estimated for the Apply dependent variable, as non-applicants did not appear on the MEPCOM files. Therefore, all individuals in the analysis would have Apply = 1. In sum, 10 hierarchical regression runs were performed: two for Apply and four for Interest and for Enlist. The summary fit statistics for the models, by dependent variable, are provided in Table 7.

Results by Dependent Variable

The following sections summarize the results of the numerous logistic regression analyses run. The most influential variables in each model are highlighted.

Apply

All respondents, YATS variables. There were 22,405 respondents eligible for modeling application status, of which 3,033 applied. Table 7 indicates that all variable sets provided significant incremental prediction. Because of the dependence of the χ^2 statistic on sample size, the values provided should be viewed with caution. For example, the contribution of the Work Status/Perceptions set (Set 5) is significant but somewhat small.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- Talked to a recruiter (0.28, 2.73)
- Composite active propensity (0.21, 1.53)
- Air Force slogan correct (0.14, 2.10)
- Average high school grades (-0.13, 0.97)
- Unaided mention (0.12, 2.49)
- Marine Corps slogan correct (0.11, 1.58)

The Somers' D statistic, which is a measure of rank correlation that assesses the predictive ability of a model, increases from .34 with only the YATS' composite active propensity variable in the model to .51 when the additional YATS variables are added to the model. This indicates that the additional variables add to the predictive ability of the model and are of incremental value in predicting who will apply to the military.

Negative propensity, YATS variables. There were 17,438 respondents eligible for the Apply analyses who professed a negative propensity toward military enlistment. Table 7 indicates results that are quite comparable to the analyses performed on the total group of respondents, although Predictor Set 4 (Education at YATS administration) appears more important than the Predictor Set 3 (Slogan Recognition).

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- Talked to a recruiter (0.34, 3.47)
- Average high school grades (-0.16, 0.96)
- Air Force slogan correct (0.12, 1.90)
- Marine Corps slogan correct (0.10, 1.48)

Table 7

Incremental Fit Statistics for the Hierarchical Logistic Regression Models, by Dependent Variable

Criteria	Model	Predictor Set	<i>n</i>	-2 Log L	k	Change	df	<i>p</i>
Apply	YATS	Mom's education	22,405	17,728.17	1	37.73		0.000
		Propensity (YATS)		15,805.25	5	1922.92	4	0.000
		Slogan recognition		15,581.26	9	223.99	4	0.000
		Education at YATS		15,433.10	20	148.16	11	0.000
		Work status/percept		15,416.04	23	17.06	3	0.001
	NP-YATS	Mom's education	17,438	10,757.03	1	26.55		0.000
		Propensity (YATS)		10,076.17	5	680.86	4	0.000
		Slogan recognition		9,969.08	9	107.09	4	0.000
		Education at YATS		9,843.48	20	125.59	11	0.000
		Work status/percept		9,825.76	23	17.73	3	0.001
Enlist	YATS	Mom's education	22,405	9,838.56	1	8.30		0.004
		Propensity (YATS)		8,995.06	5	843.50	4	0.000
		Slogan recognition		8,839.68	9	155.38	4	0.000
		Education at YATS		8,692.13	20	147.55	11	0.000
		Work status/percept		8,689.61	23	2.52	3	0.472
	All Vars	Demographics, SES	2,907	3,880.67	5	98.69		0.000
		Aptitude		3,464.94	8	415.73	3	0.000
		Educ. at application		3,271.76	10	193.17	2	0.000
		Military appl demog		3,171.62	13	100.14	3	0.000
		Propns/similar var		3,114.78	17	56.84	4	0.000
		Slogan recognition		3,111.99	21	2.79	4	0.593
		Education at YATS		3,076.65	32	35.34	11	0.000
		Work status/percept		3,072.88	35	3.77	3	0.287
	NP-YATS	Mom's education	17,438	5,367.62	1	7.35		0.007
		Propensity (YATS)		5,185.99	5	181.64	4	0.000
		Slogan recognition		5,122.82	9	63.16	4	0.000
		Education at YATS		5,026.66	20	96.16	11	0.000
		Work status/percept		5,018.15	23	8.51	3	0.037
	NP-All	Demographics, SES	1,563	2,006.68	5	89.46		0.000
		Aptitude		1,839.60	8	167.09	3	0.000
		Educ. at application		1,763.85	10	75.74	2	0.000
		Military appl demog		1,707.74	13	56.11	3	0.000
		Propns/similar var		1,689.50	17	18.24	4	0.001

Criteria	Model	Predictor Set	<i>n</i>	-2 Log L	<i>k</i>	Change	df	<i>p</i>
Enlist	NP-All	Slogan recognition		1,687.39	21	2.12	4	0.714
		Education at YATS		1,663.12	32	24.26	11	0.012
		Work status/percept		1,659.87	35	3.26	3	0.354
Interest	YATS	Mom's education	3,033	4,106.95	1	17.19		0.000
		Propensity (YATS)		4,012.68	5	94.26	4	0.000
		Slogan recognition		4,007.02	9	5.67	4	0.226
		Education at YATS		3,967.93	20	39.09	11	0.000
		Work status/percept		3,964.75	23	3.18	3	0.364
	All Vars	Demographics, SES	2,907	3,836.57	5	102.38		0.000
		Aptitude Cats.		3,631.06	8	205.51	3	0.000
		Educ. at application		3,482.85	10	148.21	2	0.000
		Military appl demog		3,401.29	13	81.56	3	0.000
		Propensity (YATS)		3,361.77	17	39.52	4	0.000
		Slogan recognition		3,359.55	21	2.22	4	0.695
		Education at YATS		3,334.94	32	24.61	11	0.010
		Work status/percept		3,333.47	35	1.47	3	0.689
	NP-YATS	Mom's education	1,620	2,230.32	1	10.02		0.002
		Propensity (YATS)		2,192.86	5	37.45	4	0.000
		Slogan recognition		2,186.71	9	6.15	4	0.188
		Education at YATS		2,157.18	20	29.53	11	0.002
		Work status/percept		2,153.72	23	3.46	3	0.326
	NP-All	Demographics, SES	1,563	2,098.57	5	61.15		0.000
		Aptitude Cats.		1,934.93	8	163.64	3	0.000
		Educ. at application		1,884.66	10	50.27	2	0.000
		Military appl demog		1,845.56	13	39.11	3	0.000
		Propensity (YATS)		1,830.69	17	14.86	4	0.005
		Slogan recognition		1,826.91	21	3.79	4	0.436
		Education at YATS		1,809.84	32	17.07	11	0.106
		Work status/percept		1,807.10	35	2.74	3	0.434

Note. Change = $-2 \log (L1/L2)$, where L1 is the likelihood value for the previous regression model (the null model for Equation 1) and L2 is the same value for the current model; *k* = the number of predictors in the regression model; *p* is the *p*-value for the χ^2 test designated by the value of Change; df = the degrees of freedom for the incremental χ^2 fit test (i.e., the test of the significance of the value of Change) and is equal to $df(L2) - df(L1)$.

Enlist

All respondents, YATS variables. When using the YATS variables, there were 22,405 respondents eligible for modeling enlistment status, of which 1,286 enlisted. Table 7 indicates that all variable sets except the last (Set 5, Work Status/Perceptions) provided significant incremental prediction. The contribution of the Education at YATS Administration set (Set 4) has a lesser effect than the three preceding predictor sets.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- Composite active propensity (0.23, 1.58)
- Enrolled in school (0.17, 1.86)⁵
- Air Force slogan correct (0.16, 2.34)
- Marine Corps slogan correct (0.16, 1.91)
- Talked to a recruiter (0.14, 1.67)
- Average high school grades (-0.12, 0.97)
- Unaided mention (0.12, 2.47)

The Somers' D statistic increases from .38 with only YATS' composite active propensity variable in the model to .51 when the additional YATS variables are added to the model. This indicates that the additional variables add to the predictive ability of the model and are of incremental value in predicting who will apply to the military.

All respondents, all variables. When using the complete set of analysis variables, there were 2,907 respondents eligible for modeling enlistment status, of which 1,262 enlisted. Table 7 shows that all predictor sets provide incremental prediction except for two: Set 6 (Slogan Recognition) and Set 8 (Work Status/Perceptions). Although Set 7 (Education at YATS Administration) provides a significant increase in fit, its contribution is arguably marginal.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- AFQT Category IV or V (-0.59, 0.06)
- Less than high school education at application (-0.35, 0.26)
- Applied to military in 1981-1986 (-0.11, 0.57)
- Applied to military in 1990-1995 (0.09, 1.40)
- Enrolled in school (0.09, 1.42)
- Talked to a recruiter (-0.08, 0.70)

Negative propensity, YATS variables. When using the YATS variables, there were 17,438 respondents eligible for the Enlist analyses who professed a negative propensity toward military enlistment, of which 623 enlisted. Table 7 indicates that all variable sets provided significant incremental prediction, although the last (Set 5, Work Status/Perceptions) is significant only at the $p < .05$ level, which is quite unremarkable given the large sample size.

⁵ This variable could be serving as a proxy for age.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- Talked to a recruiter (0.19, 1.96)
- Enrolled in school (0.17, 1.87)
- Average high school grades (-0.14, 0.97)
- Air Force slogan correct (0.14, 2.05)
- Marine Corps slogan correct (0.13, 1.68)
- Composite Reserve/National Guard propensity (0.10, 1.33)
- Years of education: mother (-0.09, 0.93)

Negative propensity, all variables. When using all of the analysis variables, there were 1,563 respondents eligible for the Enlist analyses who professed a negative propensity toward military enlistment, of which 616 enlisted. Table 7 indicates that all variable sets except Sets 6 (Slogan Recognition) and 8 (Work Status/Perceptions) provided significant incremental prediction. The impact of Predictor Set 5 (Propensity/Similar Variables) is lesser than that of the other significant sets.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- AFQT Category IV or V (-0.47, 0.08)
- Less than high school education at application (-0.29, 0.33)
- AFQT Category IIIA (0.15, 1.94)
- Applied to military in 1990-1995 (0.13, 1.61)
- Enrolled in school (0.12, 1.54)
- Talked to a recruiter (-0.11, 0.63)

Interest

All respondents, YATS variables. When using the YATS variables, there were 3,033 respondents eligible for modeling Interest status, of which 1,763 retained interest in the military. Table 7 indicates that two variable sets (Set 3, Slogan Recognition; Set 5, Work Status/Perceptions) failed to provide significant incremental prediction. The contribution of the Education at YATS Administration set (Set 4) has a significant but small predictive effect.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- Talked to a recruiter (-0.11, 0.61)
- Plans to take/took Algebra I (-0.08, 0.63)
- Unaided mention (0.08, 1.44)
- Years of education: mother (-0.07, 0.94)
- Composite Active Propensity (0.06, 1.11)

The Somers' D statistic increases from .13 with only YATS' composite active propensity variable in the model to .24 when the additional YATS variables are added to the model. This

indicates that the additional variables add to the predictive ability of the model and are of incremental value in predicting who will apply to the military.

All Respondents, All Variables. When using the complete set of analysis variables, there were 2,907 respondents eligible for modeling Interest status, of which 1,710 retained interest in the military. Table 7 shows that all predictor sets provide incremental prediction except for two: Set 6 (Slogan Recognition) and Set 8 (Work Status/Perceptions). Although Set 7 (Education at YATS Administration) provides a significant increase in fit, its contribution is arguably marginal.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- AFQT Category IV or V (0.50, 11.22)
- Less than high school education at application (-0.29, 0.33)
- Applied to military in 1990-1995 (0.17, 1.85)
- Unaided mention (0.11, 1.66)
- AFQT Category IIIA (0.08, 1.45)

Negative Propensity, YATS Variables. When using the YATS variables, there were 1,620 respondents eligible for the Interest analyses who professed a negative propensity toward military enlistment, of which 857 (52.9 percent) were in the retained interest category. Table 7 indicates that, as with the Interest analysis of YATS variables on all eligible respondents, (a) predictor sets 3 (Slogan Recognition) and 5 (Work Status/Perceptions) failed to provide significant incremental prediction, and (b) the contribution of the Education at YATS Administration set (Set 4) has a significant but small predictive effect.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- Talked to a Recruiter (-0.14, 0.56)
- Composite Reserve/National Guard propensity (0.11, 1.33)
- Years of education: mother (-0.09, 0.93)
- Plans to take/took Algebra I (-0.08, 0.63)

Negative Propensity, All Variables. When using all of the analysis variables, there were 1,563 respondents eligible for the Interest analyses who professed a negative propensity toward military enlistment, of which 834 (53.4 percent) retained interest. Table 7 indicates that predictor sets 1-5 provide significant incremental prediction, whereas sets 6-8 do not. Note that the incremental predictive power of predictor set 5 (Propensity and Similar Variables) is rather modest.

Variables of note in the final model, along with their associated standardized coefficient and odds ratio, were as follows:

- AFQT Category IV or V (0.57, 20.45)
- Less than high school education at application (-0.22, 0.43)

- Applied to military in 1990-1995 (0.16, 1.79)
- AFQT Category IIIA (0.14, 1.87)
- Talked to a recruiter (-0.10, 0.67)
- Male (0.09, 1.53)
- Enrolled in school (0.09, 1.38)

Discussion

The analyses that modeled application, enlistment, and interest behavior using common YATS variables and MEPCOM variables demonstrate that the Army can improve upon the predictive power of the YATS composite active propensity variable. In particular, the data support the following conclusions.

- *Talking to a recruiter is important for getting youth to apply.* This variable had the largest predictive relationship to application behavior of any included in the analyses. Both the standardized coefficient and the odds ratio were large for this variable. For example, the odds ratio of 3.47 for the negative propensity respondents indicates that the odds of negative propensity respondents who have talked to a recruiter actually applying for enlistment are 3.5 times the odds of those who have not done so. The effect of this variable remains significant, although not as strong, when predicting enlistment behavior with just the YATS variables. Once the MEPCOM data are included, however, this variable receives a negative weight. Given that those in the Enlist/MEPCOM analyses must have applied for enlistment (they appear on MEPCOM files), it can be argued that the change of sign reflects the screening role that recruiters are serving.
- *Advertising is important, given that those who recognize the slogans are more likely to apply and enlist.* This effect is especially powerful for recognition of the Air Force and Marine Corps slogans. The effects of recognizing the Army slogans were always in the expected direction (with one exception, affecting one slogan), but the magnitude of the effects was marginal at best. An alternative explanation, however, is that the causal effect is reversed. To wit, those individuals who are most likely to apply/enlist take an interest in the military and are therefore more likely to recall the correct slogans.
- *The variables that influence application behavior also influence enlistment behavior.* There is considerable similarity in the sets of variables which predict application behavior and those which predict enlistment behavior. These variables are those from the YATS, of course. The MEPCOM variables dominate the model when predicting Enlist.
- *The effects of policy decisions are evident when MEPCOM variables predict enlistment behavior.* By far the strongest predictors of enlistment behavior are the dummy variables for AFQT Category IV/V and for having less than a high school education at application. These effects bolster the argument above for the screening role played by recruiters when the enlistment decision is in question. Time of application was the other large predictor of enlistment behavior, with more recent applications being more likely to enlist.
- *Low aptitude respondents and non-diploma graduates are much more interested in the military than the military is in them.* Although policy dictates that these respondents are very

unlikely to be accepted into the military, they are clearly quite interested in joining. Indeed, among negative propensity respondents, the odds of retaining interest in the military is more than 20 times the odds of their Category IIIB counterparts doing so. Here again we see the screening role of recruiters, in that talking to a recruiter leads to the assessment of qualifications, which given "negative" results is likely to decrease one's interest in attempting to enlist, and this effect is quite muted once the MEPCOM variables are included in the model.

REVIEWS AND CONTENT ANALYSES

In order to understand enlistment propensity in the context of the career decision process, we reviewed existing theoretical approaches to decision making, as well as approaches that were incorporated into the content of other surveys. These reviews provided the knowledge of decision models and survey and database content that was used to develop the measures to be incorporated into the survey produced in this effort. Measurement of aptitude in a telephone survey format is a special concern of this effort. Issues related to aptitude assessment are discussed at the conclusion of this chapter.

Decision Models

Several avenues of inquiry were pursued to identify modeling constructs to improve the accuracy of enlistment propensity measures. Identification of these constructs was based on consideration of the processes that characterize individual decision making regarding career options, as well as the general factors that affect the supply of candidates for enlistment. The following list identifies the major domains or academic disciplines from which we obtained decision models relevant to enlistment behavior:

- Military personnel models that address the factors that determine enlistment supply.
- Operations research and statistical models of decision making and forecasting.
- Behavioral decision theory models. These include traditional models of subjective expected utility theory (Edwards, 1954), descriptive models of the decision process (e.g., Tversky, 1972), and descriptions of decision heuristics (Kahneman, Slovic, & Tversky, 1982).
- Research on the cognitive processes in problem solving and decision making.
- Models of consumer choice and decision making. This research applies models from cognitive and social psychology and economics to describe and predict consumer behavior.
- Occupational decision making literature. This research, grounded in the economics and sociology literature, examines the factors that affect occupational choices, including enlistment decisions.
- Models of political behavior, such as the research of Luskin (1990), which consider information, motivation, and abilities to examine political sophistication.

Enlistment decision models differ in both their focus and their methods. Some models focus on understanding and predicting the behavioral tendencies within populations, as they relate to recruiting policy. Others focus at the individual level. Within individual choice models, some describe a variety of processes that an individual may use to decide whether to enlist in the military or to pursue some other option. Other models describe single decision processes. Finally, several surveys have specifically investigated factors that affect enlistment decisions.

The Propensity to Enlist: Two Alternative Economic Interpretations

Economic models of voluntary enlistment have played a prominent role in developing and shaping personnel policies in the Army and the Department of Defense. The argument for an All-Volunteer Force rather than a draft, was based on an analysis of the efficiency of conscription compared to the voluntary labor supply. The seminal article by Oi (1967) on the comparative efficiency of voluntary methods of procuring an Army pushed public policy closer to an All-Volunteer Force in the late 1960's. The article, which provided an estimate of the so-called "conscription tax" representing the difference between a conscript's value to the civilian economy compared to his value in the Armed Forces, was based on an economic model of enlistment.

The estimates of the President's Commission on an All-Volunteer Force (Gates Commission) regarding the budget cost of relying on purely voluntary methods of recruiting for the Armed Forces were based on econometric models of enlistment. The "All Volunteer Force" military pay raise, in 1972, was the largest single increase in first term pay in history. The raise itself, and its magnitude, were recommended by the Gates Commission based on economic models of enlistment supply that the staff had estimated. Since the return to a volunteer force in 1973, economic models of enlistment supply have been used to influence policies regarding first term enlisted pay and bonuses, the number and allocation of military recruiters, college benefits, advertising, and the determination and allocation of recruiter incentives.

Enlistment propensity is a term that is rarely precisely defined. It is commonly used to mean the tendency or likelihood of a category or group of individuals to enlist. The term is not generally used in the formal economic literature on enlistment supply. The purpose of this note is to attempt to provide a more formal definition of enlistment propensity or, at least, to clarify concepts, within the framework of economic models of enlistment.

Overall economic framework. The economic theory of occupational choice provides the basic framework for analyzing enlistment supply. Economic analysis considers the enlistment of young men and women into the Army in a decision-theoretic framework. Quite simply, it is assumed that qualified individuals will choose to enlist if the net benefits they perceive from enlisting exceed the net benefits from the best alternative. The benefits of the best alternative constitute the "opportunity cost" of enlisting. Moreover, the individual is assumed to consider not simply the current benefits associated with alternative job or career choices, but the entire time path of jobs or careers. This means that the individual may find it optimal to enlist, even though the individual does not plan to make the Army a career. For example, an optimal "path" may be to enlist for three or four years, then complete college with college-fund benefits earned from Army service, or obtain a civilian job in a civilian occupation that makes use of Army training and experience.

This framework assumes that individuals value benefits today more than benefits to be received in the future. That is, they have a positive rate of time preference or "personal discount rate." Because of this time preference, one would not expect potential recruits to consider military retirement benefits very important in the enlistment decision, even though these benefits remain significantly better than retirement benefits in most civilian jobs. For example, if the

individual's personal discount rate were 10%, a dollar to be received in twenty years would be valued at only at about \$0.15 today.⁶ An implication of this result is that researchers have typically limited the "time horizon" in analyzing the enlistment decision--the horizon over which benefits of alternatives are considered-- to the initial enlistment term.⁷

We can consider five general types of factors affecting the decision to enlist:

1. Direct financial benefits. These consist of basic pay, cash allowances, and enlistment bonuses that provide the individual with general purchasing power. Future cash payments, such as the retirement annuity, would also be included in this category. These "cash related" benefits are directly comparable to salary and related pecuniary compensation that the individual may receive in a civilian job.
2. In-kind benefits. These benefits are provided "in-kind" or with some strings attached. These include health and dental benefits, housing and food provided "in-kind", commissary privileges, and so forth. They may also include education benefits and general training that has application to civilian sector jobs.
3. Intangible benefits. These consist of less tangible items, such as a sense of patriotism, service, or fulfillment of duty that one may obtain from enlisting and serving in the Army.
4. Other conditions of service. This category includes all non-pecuniary conditions of service, such as desirability of duty stations, family separation, fixed employment contracts, risk of physical injury or death, and other factors.
5. Information. Individuals must become informed regarding the Army, its benefits, and its conditions of service before it becomes a viable choice.

In addition, the benefits of the alternative opportunities obviously affect the individual's decisions. Hence, pay, benefits and non-pecuniary conditions of employment associated with alternative opportunities are important factors affecting enlistments. These opportunities will vary with the state of the economy, and with the individual's characteristics associated with the decision to enlist.

Enlistment decision model: two alternative interpretations. The decision to enlist is a choice among competing alternatives. At the individual or "micro" level, we assume that the individual will enlist if the net benefits of enlisting in the Army are greater than the benefits associated with the best alternative choice. This commonsense decision rule can be expressed as: Individual *i* will choose to enlist if

⁶ This does not mean that they do not consider them at all or that significant changes in military retirement benefits would have no effect on enlistments. Rather, it means that changes in such benefits are heavily "discounted" by the potential recruit. The effect of changes in the retirement system will have a greater effect on those that are closer to retirement.

⁷ Moreover, there is some evidence that the personal discount rate relevant to potential recruits is quite high--on the order of 15-20% in real terms. See, for example, Steve Cylke, Paul F. Hogan, et al, "The Personal Discount Rate: Evidence from Military Enlistment Decisions," mimeo, submitted to the *Journal of Human Resources*.

$$B_{i,E} > B_{i,A} \quad (3)$$

where $B_{i,E}$ are the net benefits associated with enlisting in the Army and $B_{i,A}$ are the net benefits associated with choosing the best alternative.

Empirical or operational specification. As we have stated it, the decision rule is something of a tautology. We add empirical content by attempting to measure, as much as possible, the net benefits associated with the alternative occupational choices that were outlined in the previous section. By relating enlistment decisions to the observed variation in the factors hypothesized to affect enlistments, we are able to estimate the effects of these factors on enlistment. From the statistical relationships measured, we can test (a) whether the hypotheses concerning factors affecting enlistment decisions are correct; and (b) estimate the relative magnitude of various factors on enlistment decisions.

Some components of B can be observed directly for both the Army and the best alternative; others may be measured indirectly using correlated observable variables. First term pay, bonuses and education incentives are examples of benefits that can be measured directly. Average civilian youth wages, for comparably educated individuals, serve as a proxy for the wage offer of the best alternative choice. The variation in this measure is assumed to be highly correlated with the variation in the best alternative wage offers to individuals over time. Moreover, variables like the civilian unemployment rate, which themselves are not aspects of an alternative choice, will nevertheless be related to the alternative opportunities that the individual faces, and can be included for this reason.

The effects of factors affecting enlistment decisions that do not vary either cross-sectionally or over time cannot be directly measured. The effects of benefits such as health insurance, housing, and so forth, can be measured only to the extent that these are observed to vary. If they remain constant, the effects of individual factors cannot be separately measured.

Finally, there will be some factors affecting enlistment decisions that vary cross-sectionally or over time that cannot be observed by the researcher. A major source of variation among individuals is variation in individual tastes or preferences. Individuals' taste for military life, compared to the life associated with the choice of a civilian alternative, is inherently unobservable but will account for a substantial portion of individual variation in choices. Tastes or preferences, however, may have a systematic component that is related to an individual's observable individual characteristics. If so we can model the individual's net "taste" for military life as:

$$\alpha + \phi Z_i + \varepsilon_i \quad (4)$$

where " α " is a constant component of the net taste for Army life across individuals, ϕZ_i is the systematic component of tastes that is related to a vector of individual i 's demographic characteristics or expressed attitudes, Z_i , and ε_i is an individual component of tastes that is unobserved by the researcher. Moreover, " ε " will be distributed across the population with mean zero and finite variance.

We can rewrite the empirical version of the decision rule for Army enlistment as:
Individual i will enlist if

$$\beta_E X_{i,E} + \alpha + \phi Z_i + \varepsilon_i > \beta_A X_{i,A} \quad (5)$$

This is simply the original decision rule stating that the individual will enlist if the net benefits of enlisting exceed the net benefits of the best alternative choice. $X_{i,E}$ are observable factors associated with the choice of enlisting. The vector X_E will include Army pay, education incentives, and so forth. The vector " β_E " is a vector of coefficients to be estimated. Similarly, X_A is a vector of observable factors associated with the best alternative choice, which will include a measure of civilian pay. The expression $\alpha + \phi Z_i + \varepsilon_i$ is individual i 's net taste for Army life, as defined above. We can rewrite the decision rule as

$$\alpha + \phi Z_i + \beta_E X_{i,E} - \beta_A X_{i,A} > -\varepsilon_i \quad (6)$$

or

$$\beta_A X_{i,A} - \alpha - \phi Z_i - \beta_E X_{i,E} < \varepsilon_i \quad (7)$$

If the random component, ε , is distributed $N(0, \sigma^2)$ we can, in principle, estimate this model as a probit equation. Define $Y_i = 1$ if the individual chooses to enlist, and $Y_i = 0$ if not. Then,

$$\text{Probability}\{Y_i = 1\} = \text{probability}\{\beta_A X_{i,A} - \alpha - \phi Z_i - \beta_E X_{i,E} < \varepsilon_i\} \quad (8)$$

which is equal to

$$\int_{\beta_A X_{i,A} - \alpha - \phi Z_i - \beta_E X_{i,E}}^{\infty} f(\varepsilon) d\varepsilon \quad (9)$$

We can estimate this probit, where the original coefficients are scaled by $(1/\sigma^2)$.

Obviously, the individual can only choose to enlist in the Army if he or she is informed about the opportunities available in the Army, and the benefits and incentives offered. The stock of information regarding Army enlistment opportunities will be related to the number of recruiters in the field and to advertising in the various media. Hence, recruiters and advertising expenditures would enter the micro level equation as representing the information available to the individual regarding Army enlistment opportunities.

This particular model is formulated at the individual or micro level. A related model can easily be defined at a more aggregate level, where the level of enlistments is explained as a function of the eligible population, and the factors associated with the enlistment choice and alternatives, similar to the micro model. This more aggregate model of enlistment supply is the

type usually estimated by applied researchers to guide policy regarding recruiting goals and resources.⁸

Definition of enlistment propensity: alternative one. The model of the individual's enlistment decision suggests two ways to define the propensity to enlist. First, we can define propensity simply as the probability that an individual of given characteristics will enlist. That is,

$$P_i = \Pr\{Y_i=1\} = \int_{\beta_A X_{i,A} - \alpha - \phi Z_i - \beta_E X_{i,E}}^{\infty} f(\epsilon) d\epsilon \quad (10)$$

$$= F(\alpha + \phi Z_i + \beta_E X_{i,E} - \beta_A X_{i,A}),$$

where $F(\dots)$ is the cumulative normal density function and the coefficients have been scaled by σ^2 . In this formulation, propensity is affected by all of the X 's. Changes in Army pay, civilian unemployment, education incentives, and so forth all affect the probability of enlistment or propensity. Hence, in order to analyze propensity one must control for all of the factors in the enlistment decision function. That is, one must account for the state of the economy, civilian pay, Army pay, recruiters and advertising, and all other factors affecting the enlistment decision. A change in propensity, then, results from changes in any factor affecting enlistments. This definition of propensity as the probability of enlistment is quite broad--and perhaps too broad.

Definition of enlistment propensity: alternative two. An alternative is to consider propensity as the individual's "taste" for Army service that is independent of the particular benefits offered or the state of the economy. That is, propensity becomes the portion of the enlistment index function that is represented by "tastes":

$$\alpha + \phi Z_i + \epsilon_i \quad (11)$$

Under this definition, a change in propensity is a change in enlistment probability that cannot be accounted for by changes in observable factors affecting enlistment. That is, there is a change in enlistment probabilities or enlistment rates that are not due to changes in pay, recruiters, the civilian economy, or any of the other X 's that can be directly measured.

Propensity defined as the "taste" for enlistment is, in a sense, a name for our lack of understanding. If there is a change in measured enlistment rates or enlistment probabilities, one must first take into account all measurable factors affecting enlistment--all of the X 's in the enlistment decision model--before concluding that there has been a change in propensity. If, after accounting for all of the changes in the measurable factors affecting enlistments, there appears to be an unexplained change in enlistment probability, we would then conclude that this change in enlistment probability is due to a change in propensity.

⁸ An example of a "micro" level econometric model of the enlistment decision is Thomas Daula and David Smith, "A Microdata Model of Enlistment in the Armed Forces," Paper presented at the meetings of the Econometric Society, Ithaca, New York, June 1982. A recent example of an aggregate model is John Warner and Mellie Warner, "Navy Recruiting Incentive Models," NPRDC, September, 1991.

The implications of this definition of propensity are that it cannot be directly measured in a survey or through statistical or econometric methods. Rather, we directly measure enlistment probabilities. Changes in enlistment probabilities that are the result of changes in propensity can only be inferred after an analysis which attempts to account for the effects of all measurable factors on enlistment probability.

If there has been a systematic change in enlistment probabilities that cannot be accounted for by changes in observable factors affecting enlistment, we can infer that " α "--the average taste for Army service--may have changed. In particular, we can write:

$$\alpha + \phi Z_i + \beta_E X_{i,E} - \beta_A X_{i,A} = F^{-1}(P_i) . \quad (12)$$

Assuming that the X's (and their coefficients) remain constant between two periods, t and t-1, we can solve for the change in average propensity to enlist as:

$$\Delta\alpha = F^{-1}(P') - F^{-1}(P'^{-1}) \quad (13)$$

If the X's are constant and there is a change in the probability of enlistment, this expression provides an estimate, in terms of the constant from the probit index, of this change in propensity.

Implications. The first definition of propensity is really just another name for the enlistment rate or the probability of enlistment. It can change because recruiting resources have changed, civilian opportunities have changed or because the youth population's "taste" for Army service has changed. The second definition narrows propensity to mean the taste or propensity for Army service, holding the relative measurable benefits of Army service constant. Propensity in this sense means changes in the intangibles--patriotic sentiments, perception of the military service as an honorable career, and so forth. In a sense, the second definition, while more abstract, may also be a more challenging and potentially useful concept. The first concept is redundant with applied enlistment supply research. The second concept forces the researcher to explicitly account for all measurable factors affecting enlistment decisions--first term pay, youth unemployment rates, education incentives--before concluding that there has been a fundamental change in the market or a change in tastes or attitudes toward military service. Research in the career decision process, described in the following section, attempts to identify some of the factors that may determine an individual's "taste" for military service.

Decision Process Models

Enlistment decisions may occur in several stages over a considerable period of time. Several theories have enumerated the stages in the decision process. Models based on theories from consumer psychology (e.g., Jacoby, Hoyer, & Brief, 1992), individual decision making (e.g., Janus & Mann, 1977), and problem solving (e.g., Newell & Simon, 1972) have similar decision making stages. The stages described below represent a hybrid that synthesizes features from specific models that seem particularly salient to the enlistment decision.

Stage 1: Recognize the problem. The first step in the decision process is to determine that there is some unmet need, or discrepancy between the current state and what is desired. Some individual differences in the enlistment decision process may be placed in this stage. For

example, Lerro, Tagliareni, Batley and Sellman (1991) noted two factors that recruiters report lead youth to the military. Some enlist in the military because it is a way to achieve a particular occupational goal. Others enlist because they are frustrated with some goal that they have been unable to attain in civilian life. These two approaches to enlistment imply different ways of defining the occupational decision problem. Either of these approaches may lead to a decision to enlist; still other viewpoints may lead to the choice of other occupational contexts.

Several other types of individual differences in problem recognition may be related to occupational choice. For example, youths may differ in whether they approach the enlistment decision with a long-term or short-term view. This difference may be related to the "planfulness" factor reported by Johnston and Bachman (1972), and may also be related to time discount functions that are often in economic models. Individual differences in problem recognition could also be associated with differences in the specific events that trigger the occupational decision process (graduation from high school, loss of job, family problems, etc.).

For experts, recognition of the problem is often the major step in decision making (Klein, 1989). Experienced decision makers in a particular domain often have solution approaches that are linked directly to their characterization of the problem. However, for the inexperienced decision maker, like the potential enlistee, recognizing the problem is just the first step in a deliberative process that leads to an occupational choice.

Stage 2: Generate options. Owens (1992) suggests that individuals first select a social context for their occupational choice, then seek a particular occupation within that context. The three primary social contexts for post-high school youth are full-time civilian employment, college, and the military. The initial selection of social context and subsequent focusing within that context implies an iterative decision process. Thus the individual generates and considers options several times in the occupational choice process. The importance of social context means that we should consider the enlistment decision in the larger framework provided by the social contexts that the youths consider.

Stage 3: Gather information. Information may come from an internal or an external search. Internal search involves retrieval of relevant information from memory. The content of this information depends on factors such as family background and personal experience. Retrieval from memory is affected by a number of factors that can reduce the accuracy of remembered information. For example, because military occupations are linked directly to warfighting, the physical risks of the military are particularly salient, and may be overestimated compared to comparable physical dangers of civilian jobs.

In this stage, one might expect a non-monotonic relationship between external information gathering activities and enlistment propensity. Information searches would be conducted by those individuals who were most uncertain about their occupational choice. Youth who were relatively certain about whether or not they would enlist would not need to gather information. There may also be interactions with the amount of information already known about military life (or life in employment or educational contexts). An individual who came from a military family, for example, may have greater knowledge about military life, and would

not need to gather as much information about it. That person might need to obtain additional information about other occupational contexts, however.

Stage 4: Aggregate data and reach decision. Because occupations are complex and vary in many different ways, it is unlikely that one occupational context will be better than another in every respect. Consequently the potential enlistee must weigh the advantages of military life against those of other options.

One characteristic in which alternative aggregation procedures differ is in the cognitive load that they place on the decision maker. Procedures that allow the advantages of one occupational context to compensate for its disadvantages are more difficult to perform than procedures that set minimum standards on each relevant criterion, or eliminate unsatisfactory options sequentially. Some of these more sophisticated evaluation methods may be beyond the capability of low-aptitude youth.

Stage 5: Get feedback. In addition to overall feedback on occupational choice that comes after the youth has chosen a particular occupational option, the youth may obtain feedback at many points in the decision process. This feedback may be from parents, peers, teachers and counselors, or other people who are important to the youth.

Aggregation Process Models

Most of the research regarding the individual decision process has focused on the processes by which people use the information they have gathered to select a single alternative from those available. The following two classes of these models describe some of the variety in the processes by which decisions are made. These processes differ with respect to the quality of the decision process and the cognitive load that it presents to the decision maker.:

Compensatory models. A compensatory approach to aggregation integrates the advantages and disadvantages of each option to produce a single measure of value. Advantages in one area can compensate for disadvantages in another area (von Neumann & Morgenstern, 1947; Savage, 1954; and Edwards, 1954). Because a compensatory process requires the decision maker to consider simultaneously several factors that distinguish options, it can present a substantial cognitive load on the decision maker (e.g., Simon, 1954; Kahneman, Slovic, & Tversky, 1982).

Probably the most influential compensatory model in the areas of occupational or consumer decision making was developed by Fishbein and Ajzen (1975; Ajzen & Fishbein, 1980). This model predicts behavioral intentions based on an evaluation of the expected outcomes of the behavior and on the anticipated opinions of relevant others. This model has served as an organizing framework for many direct investigations of enlistment propensity.

Non-compensatory models. Most non-compensatory approaches to decision making use a method that simplifies the decision process. Such procedures are often sequential, in which alternatives are eliminated if they do not meet certain criteria. Other non-compensatory approaches set minimum standards, and select options only if they meet all relevant standards. The choices produced by non-compensatory models, which include conjunctive, disjunctive,

lexicographic, and successive elimination models, can often be affected by the order in which the options are considered. The reduced cognitive requirements for these decision approaches suggest that they may be used to a greater extent by individuals with lower aptitude.

Survey and Database Content

Topics and items of relevant surveys and databases were examined in conjunction with the review of decision models to develop a preliminary list of content areas for a propensity survey. The general approach was to identify important content areas, and the major constructs within each area, relevant to youth career decision-making, especially as they relate to the military. The major areas under investigation for potential survey items were:

- consumer psychology,
- social psychology,
- decision theory,
- vocational psychology/career development,
- economic enlistment models,
- temperament and biodata,
- knowledge of, interest in, and beliefs about the military,
- socioeconomic status and other sociodemographic information,
- cognitive aptitudes,
- influencers of youth,
- educational intentions,
- work values, and
- measures of propensity to enlist in the military.

In addition to analysis of YATS, as described in the previous section, and reviewing the literature in the areas shown above, items were reviewed from previous research on other related surveys, including the National Longitudinal Survey of Youth (NLS) and Army Communication Objective Measurement Systems (ACOMS).

The reviews identified models, component variables or factors, and measurement techniques. The reviewers also noted concepts, ideas, and formulations that might prove helpful in the development of later models and survey instruments. Members of the team prepared initial master topic lists for the domains in which they were most experienced. The team members met to prepare a comprehensive listing of potential topic areas. Topic areas covered personal and family characteristics, military orientation (e.g., attitudes toward the military, reactions to military advertising, recruiter contact, perceived benefits, physical and mental challenge), environmental conditions, and occupational orientation. This topic list was used to aid development of a survey instrument.

The theories of individual decision making that apply to the enlistment decision encompass most of the variables that have been investigated in previous surveys. However, the roles of some important variables were not specifically portrayed in these theories. Three variables deserve discussion: aptitude, personality variables, and knowledge of the military.

Aptitude. Aptitude may affect the decision process in several ways. An important consideration for modeling enlistment decisions is the effect of aptitude on the options that are available to the potential enlistee. High-aptitude youth tend to have better options available among educational and occupational alternatives. Aptitude may affect the decision process, as well. For example, high-aptitude youth may employ more sophisticated evaluation procedures than their lower-aptitude counterparts. Finally, aptitude may interact with other variables in the decision process. For example, high-aptitude youth may tend to have a longer-range view of the decision, or may come from higher socioeconomic status environments than youth with lower aptitude. It will be difficult to separate these potential effects of aptitude on the decision process. It is also important to gain additional information on aptitude because it is an important factor in qualifying for military service and because aptitude information might be used to improve the degree to which the sample data is representative of the population of interest.

Personality variables. The cognitive models we have described are largely silent on the effects of individual differences on the decision process. Although some of the occupational choice literature states that individuals prefer occupations that match their personality, there is no specification of what procedure people use to assess the match between a particular occupation and their personal characteristics. Consequently, these models do not add much to our knowledge of how individuals of different personality types choose different types of occupations.

Knowledge of the military. Knowledge of the military lifestyle can come to the potential recruit in several ways. Individuals from a military family obtain some of this knowledge independent of whether they have any interest in a military occupation. Individuals who do not have such a background need to search for relevant information. We anticipate that the individuals who spend the greatest effort to obtain information will be those who are the least certain about their occupational choice. These statements about military knowledge have two implications that make our research more difficult. First, the amount of military knowledge that a person has is not a measure of the effort that the individual went through to obtain it. Second, the effort made to obtain knowledge of military occupations may be nonlinearly related to enlistment propensity.

Table 8 presents the seven major areas we addressed in our preliminary development of the survey content. Five areas are further divided into key topics. A nonexhaustive list of potential factors from which items were developed is also shown.

Four areas, Family and Peer Influence, Occupational Personality, Military Orientation, and Comparison of Military and Civilian Careers, formed the most important components of the preliminary survey content. Occupational Personality encompasses the broadest set of topics and refers to personality traits, interests and values related to school and work. Research on personality traits has tended to focus on predicting job performance and attrition, while vocational psychology has emphasized civilian careers.

Table 8.

Examples of Specific Factors by Major Survey Area and Sub-Topic

Major Survey Areas	Sub-Topics	Examples of Specific Factors (not exhaustive)
Personal Characteristics		Age, Education, Gender, Race/Ethnicity, Marital Status, Aptitude, AFQT Category, High School Grades, Number of Math Courses, Months Since High School, Health Status
Family Characteristics	Family Contingencies Family Values and Attitudes Socioeconomic Status	Socioeconomic Status, Family Income, Parent's Education, Family Size, Single Parent Status, Birth Order, Financial Concerns
Family and Peer Influence	Information Network Influencer Characteristics Influencer Attitudes	Father's Military Background, Peers' Military Background, Parental and Peer Attitudes toward Military, College and Civilian Careers
Occupational Personality	Temperament and Interests	Achievement, Dependability/Conscientiousness, Adjustment/Emotional Stability, Surgency, Agreeableness, Locus of Control, Physical Condition, Extraversion, Openness to Experience, Substance Abuse, Tolerance for Stress, Planfulness-Post HS Plans, Risk-Taking, Career Interest (Person-Environment Fit)
	Career Orientation, Values & Reward Preferences	Career Aspirations/Goals, Need for Organizational, Supervisor & Coworker Support, Routine Work, Job Autonomy, Job/Economic Security, Chance for Independence & Improvement, Leadership Development, Apprenticeship Program, Workload & Scheduling Preferences
	Civilian Work Experience and History	Civilian Labor Market Experience, Job Problems, Job Satisfaction, Job Tenure, Employment Status, Time Since Last Job, Current Hourly Wage, Disciplinary Problems
	Educational Experience and Intentions	Affective Response to School, Grade Failure Before or After 9th Grade, College/Vocational HS Track, 9th Grade or HSGPA, Educational Aspirations, Strength of College/Vocational/ Technical School-Attending Plans
	Attitudes toward Self and Society	Perception of Career & Earning Potential, Self-Confidence, Self-Efficacy, Economic-Efficacy, Career Identity, Vocational Maturity

Table 8.
Examples of Specific Factors by Major Survey Area and Sub-Topic

Major Survey Areas	Sub-Topics	Examples of Specific Factors (not exhaustive)
Military Orientation	Knowledge of the Military	Armed Forces training, ROTC Training & Benefits, Knowledge of & Attitudes toward Enlistment Bonuses, DEP, Enlistment Terms, First Term Pay, Fringe & Educational Benefits, Retirement Benefits, Training & Promotion Opportunities, Location Guarantees, Family Programs/Services & Environment, Spouse Employment, Military Life, Standards, Goals/Missions
	Attitudes toward Military	Patriotism, Dovish or Hawkish, Commitment to Serve, Awareness of & Reactions to Armed Forces Advertising, Exposure to & Attitudes toward Recruiters, Opportunity to Serve One's Country, Inter-Service Competition/Preferences
	Military Interest	Preference for Physical Work, Combat Interest, Adventure/Excitement, Travel, Mental & Physical Challenge, Personal Freedom, College Funding, Skill Training, Attitude toward Authority, Technology Interest
Comparison of Military & Civilian Careers	Perceptions of Career Opportunities and Work Environments Relative Pay and Benefits	Military/Civilian Pay Ratio, Perceptions of Relative Benefits and Job Security, Perceptions of Relative Job and Skill Training Opportunities
Environmental Conditions		Educational and Labor Market Conditions, Industrial Growth Rate, Unemployment Rates, Population of Eligible Enlistees

In the personality domain, the ABLE dependability scale (similar to the Big Five personality dimension of conscientiousness), and adjustment scale (similar to Big Five emotional stability construct), which has the highest correlation with attrition, were possible candidates for inclusion. In addition, direct measures of the Big Five personality factors (conscientiousness, agreeableness, extroversion, emotional stability, and openness), such as the Air Force Self Description Inventory (Driskill, 1994), offer promise. For example, youths low in dependability and adjustment may have a low propensity for military enlistment, unless their other options are limited because of school and civilian work problems. (Dr. Leonard A. White provided this observation and example.)

One of the issues in measuring career interests is that the typical approach (used in the Self-Directed Search and DoD career interest instruments like AVOICE and Interest Finder) is to ask respondents to rate their preferences for a large number of occupations and related activities. This format would not fit within the scope of the present survey. Therefore, we investigated alternative strategies for inquiring about occupational interests. One possible strategy is to use the JOB questionnaire from Project A, which taps job reward preferences, e.g., autonomy or tolerance for routine work. Further, we considered items on enlistment motivations used in previous Army research (received from Dr. Mark Young). We also looked into including a small set of traditional career interest items.

Under Family and Peer Influence, we examined social influences, along with a young person's information network. Military Orientation included an individual's knowledge of, attitude toward, and interest in the military way of life. Finally, youth career decision-making and retention research indicates that enlistment and reenlistment decisions are made with consideration of civilian employment and educational opportunities.

One background characteristic that has been shown to vary with propensity is cognitive ability level. In general, those of lower ability levels (excluding those who are very low and hence unqualified for service) are more likely to express positive enlistment intentions than high aptitude youth. Orvis and Gahart (1989) estimate "quality," or the probability of scoring in the upper half of the Armed Forces Qualification Test (AFQT) distribution based on YATS questions assessing demographic variables and high school courses and grades. Over the years this model has become less accurate, placing 65% of respondents in the upper end of the distribution. Because of this discrepancy, the model has recently been recalibrated and improved with the addition of several new predictors (Orvis, Sastry, & McDonald, 1995).

Candidate cognitive ability estimators include YATS-type demographics and educational accomplishments as well as background/biodata questions of a more psychological nature. Attitudes towards school, time spent on homework, and watching television, and so forth, may also be appropriate. Such items are included in the National Assessment of Education Progress (NAPE) and are used to predict ability levels (on a group level) in cases where there are missing test data.

Another approach to cognitive ability estimation relies on actual "test" questions included in the survey. For example, the Army's Computer Adaptive Screening Test (CAST)

contains brief word knowledge and arithmetic reasoning tests and provides a good measure of aptitude. The arithmetic reasoning test would probably be inappropriate for CATI administration, but the word knowledge test holds more promise. The CAST word knowledge test, or something like it, offers promise as a tool for assessing aptitude in a survey, but the issues of reliability, validity, and administration time must be carefully balanced to ensure that the test is both useable and useful. The following section describes an effort to establish the validity of a telephone-administered word knowledge test based on the CAST.

TELEPHONE-ADMINISTERED APTITUDE TEST

The U.S. Army Research Institute developed the CAST to help U.S. Army recruiters estimate the cognitive ability of potential recruits. This test comprises multiple choice Word Knowledge (WK) and Arithmetic Reasoning (AR) items, and the resulting scores are used as a quick gauge of a candidate's likely AFQT score. Past research has shown the correlation between CAST and the AFQT to be respectable with uncorrected and corrected (for range restriction) values of $r = .79$ and $r^c = .83$, respectively (Knapp, 1987). Persons scoring within the zone of consideration for service are encouraged to proceed further in the application process.

Potential recruits use a computer to answer CAST questions. The CAST selects multiple choice questions from an item bank, and estimates performance with approximately 10 items from the verbal domain and 5 from the quantitative domain. The word knowledge questions require recognition of synonyms. The CAST administration takes about ten minutes.

We used the WK portion of CAST in a Computer-Assisted Telephone Interview (CATI) administration as the telephone test for this project. In CATI administration, the telephone interviewer used a computer with the branching logic for the adaptive test. The test consisted of the vocabulary items and the response options (maximum of five). Interviewers told the recruits the items and response options, and entered the recruits' responses into the computer; the branching program selected the next item. The interviewers repeated the process and the program estimated ability using either 10 or 15 items.

Method

Subjects

The Army provided two lists of names, social security numbers, addresses, and telephone numbers for a total of 600 members of Delayed Entry Program (DEP), individuals who had contracted for enlistment but were awaiting their shipping dates. There were 250 in the first list and 350 in the second list. The DEP members were from the following areas: Boston, MA; Richmond, VA; San Antonio, TX; St. Louis, MO; and Oakland, CA.

Respondents were screened to verify identity; they were told the purpose of the research and the unofficial nature of the test. If the respondent agreed to participate, they were given a practice question, followed by the adaptive test.

Interviewers attempted telephone test administration with all individuals, but locating many of the individuals was a problem. For example, we could not locate 12 of the 32 DEP members from the second list in the Boston, Massachusetts area (including one who had shipped); only two refused to take the test. In San Antonio, 16 out of 25 listed took the test; five we could not locate. Response rate is hard to determine given the problems of locating the individuals. This phase of telephone testing produced 193 telephone test scores, 83 from the first list and 110 from the second list.

The list of DEP members was matched and merged with Army test and demographic data. The data elements include scores on the WK test and AFQT composite from the paper-and-pencil, operational Armed Services Vocational Aptitude Battery (ASVAB). AFQT is composed of Paragraph Comprehension (PC), Arithmetic Reasoning (AR), and Mathematics Knowledge (MK) items in addition to WK. Of the 193 cases with telephone test scores, 149 could be matched via Social Security Number by the Army. To avoid bias effects, the list of DEP members was not pre-merged with Army files. Hence, the interviewers did not know the AFQT scores of the respondents and could not be biased by that information. AFQT scores and other demographic information were not known at the time of the telephone test administration or face-to-face interviews but were added subsequently for analysis.

Results

The telephone test and ASVAB WK scores were correlated to ascertain the likelihood of modality effects (i.e., differences between telephone test-WK and paper-and-pencil administered WK). Correlations between the telephone test and AFQT were also calculated.

Table 9 provides descriptive statistics for the results of the telephone administration. The average test scores (AFQT, WK) and gender and racial/ethnic composition of sample members who did and did not take the telephone were roughly comparable. The only notable deviation was one aspect of race/ethnicity. Whites appeared less willing than Blacks to respond to the CATI interview and take the test.

Table 9.

Telephone Test Administration Descriptive Statistics

Variable	No Telephone Test (n = 136)		Telephone Test (n = 149)	
	Mean	Standard Deviation	Mean	Standard Deviation
AFQT (percentile)	59.5	18.8	59.4	18.3
WK (raw)	28.1	4.4	28.3	4.1
Gender (male)	76%		77%	
White	65%		59%	
Hispanic	4%		10%	

Table 10 provides the telephone test correlations. The mean telephone test score (using a percentile metric) was 46 (standard deviation = 8.5). The telephone test showed significant ($p < .01$) correlations with WK raw score and AFQT ($r = .72$ and $r = .67$, respectively), meeting the a priori value for acceptance. After correcting for restriction of range, the magnitude of the correlation with WK raw score was .91, and with AFQT was .78.

Table 10.
Telephone Test Intercorrelation Matrix (corrected)

	Telephone Test	AFQT (percentile)
WK (raw)	.72 (.91)	.69 (.89)
Telephone Test	--	.67 (.78)

Discussion

These results indicate almost no modality effects to dampen the relationship between the telephone test and AFQT. The telephone test predicts AFQT nearly as well as the actual, CAST WK score does. A linkage between the two tests seems possible and a telephone administration of this adaptive word knowledge test should be considered for inclusion in the YATS. Pilot testing should be conducted to determine whether the telephone test is superior to the current method of AFQT estimation.

The data presented above are not only encouraging from the standpoint of gaining information on enlistment intentions by personnel quality, but they may have testing implications as well. Further study of modality effects could prove informative. The results may have been a function of motivational differences (i.e., highly motivated for the AFQT and less motivated for the telephone test), interviewer and other testing condition differences. Correlation between the telephone test and AFQT for the purposes of improving quality estimation in a YATS-type survey is not proof that one may interchangeably administer a cognitive test by phone or via paper-and-pencil. This point may be obvious but it is important to state nonetheless.

This research used DEP members who are already qualified in aptitude. Despite the correction for restriction of range, these results may not generalize to the youth population as a whole. For example, the telephone administration of the test may be too difficult for lower aptitude youth, and the telephone test may not discriminate aptitude levels in this range. If this difficulty occurs, then the correlation obtained in the population as a whole will be less than that estimated from the restricted sample. This result would limit the usefulness of the telephone test as a general measure of aptitude, but would have a much smaller effect on its usefulness as a method to segment the population. Since the Army is not interested in making precise distinctions among unqualified youth, inability of the telephone test to make these distinctions should not be considered a major problem with the test.

Incorporating the telephone test into a general survey such as YATS requires the consideration of many practical issues. For example, because recognition of isolated words is much more difficult than recognition of words embedded in meaningful statements, the telephone test was administered by interviewers who were carefully selected for their ability to enunciate words and well trained in the test procedure. In contrast, YATS administration uses a large number of interviewers whose diction may vary substantially. Incorporating the

telephone test in YATS, the way it is currently administered, would be expected to increase error variance and reduce the correlation with AFQT. Any large-scale application of the telephone must consider interviewer characteristics, and seek ways to minimize their effect, through selection, training, or use of technology. Furthermore, the possibility of reducing the length of the telephone test should be examined. The level of the correlation of test scores with AFQT suggests that a shorter test may produce adequate information for segmenting the population.

DELAYED ENTRY PROGRAM INTERVIEWS

The review of decision models indicated that differences between individuals regarding their choice of whether or not to enlist may be affected by their perceptions of the benefits of military life compared to civilian alternatives, as well as the specific process that they use to make this important choice. To get a better idea about the process used by individuals to choose military service, we conducted individual, face-to-face interviews with youth who were part of the Delayed Entry Program (DEP). The interviews were designed to generate a better understanding of their decision to enlist in the Army and the way in which they reached that decision.

Protocol Development

Interview instrument development proceeded from information gathered and steps conducted in the activities described in the review of youth attitudes, decision models, and survey content. We developed questions to examine the process by which the recruits approached their career decisions, the information they obtained to aid their decisions, their sources of information, the factors that were important in their decision, and how they aggregated the advantages and disadvantages of military life to decide to enlist. In assessing this process, we considered the educational and employment opportunities available to the enlistee, as well as his opportunity for military service. The interviews assessed both the relative advantages of these options and the likelihood that the interviewee would be able to obtain those benefits. Since many recruits were expected to have exhibited negative propensity at an earlier time, we developed questions to assess how their opinions changed during the year before they decided to enlist.

The overall goal of the interview was to recover the process that was used to arrive at the decision to enlist in the Army. This was a retrospective interview covering the year prior to the enlistment decision. Consequently, we needed to incorporate procedures to encourage accurate recall and to avoid biases caused by reconstructive processes or suggestibility. The overall approach used in the interview protocol contained several features to promote accurate recollection by the respondent. The set-up scripting and questions progressed from situations considered more straightforward and easy to remember to those involved in the enlistment decision making process that are more difficult to separate into discrete components. The emphasis was on having interviewers probe for more information from respondents to build more detailed pictures of their lives during the time period when they were most likely to be making decisions about their future endeavors. These details could then be analyzed for influences and links to the enlistment decision.

The guide for the DEP interviews is shown in Appendix A. The resulting interview consisted of the following components.

1. Demographic information—age, race, marital status, education, self-assessed ability, family structure, parent's education and occupation, current job (if any).
2. Recollections from one year prior to enlistment.

3. Career plans one year prior to enlistment—enlistment propensity, career options considered, information obtained regarding career options, advantages and disadvantages of career options, opinions of other options.
4. Activities in the year prior to enlistment—activities taken to pursue career goals, effect of these activities on assessment of options, the final decision to enlist.
5. Current opinions about enlistment—opinions about career options, expectations about military service.

Method

Procedure

We interviewed those individuals who participated in the telephone test who also agreed to participate in the face-to-face interview. Thirty-six (36) interviews were scheduled on a voluntary basis at the five locations, and fourteen (14) were completed. Each interview lasted approximately one hour. Permission was received to conduct the interviews at government facilities, but arrangements were made directly with the youth.

The interviews had three phases. The first focused on memories of one year before they signed the contract to enlist. Respondents answered two propensity questions from YATS (unaided and aided) and questions on their education, civilian employment, military and other options (attractiveness, likelihood of acceptance). The second phase concerned memories of activities during the year, including pursuit of options and changes in opinions. The third phase dealt with current opinions.

The interviewers took steps to improve the accuracy of recall by the respondents. Research has shown difficulties that people have in reporting cognitive processes and in reconstructing processes in recall. Thus, the interviews used three steps to help overcome those difficulties (the problem of recall of covert processes remains, however, to some extent). First, they asked detailed questions to help the interviewee recall one year before signing the enlistment contract. The goal was to provide cues for recalling relevant activities and opinions in the early phase of the interviews. Second, they used a graphic timeline to keep the interviewee focused on the relevant time period. Third, they asked about general aspects of career options, rather than specific, leading questions. For example, they asked, "What type of environment did you think you would be in?" or "What kind of people did you think you would be around?"

Limitations

Two experimental factors limit the generalizability of the research: sampling and instrumentation limitations. Interview respondents were volunteers, among whom only a subset participated. The sample was a very small portion (total $n=14$) of a planned total sample of around 50. The small size and non-random sampling preclude generalization to the population (youth, potential enlistees).

Multiple interviewers conducted the interviews and appeared to differ in their administration of the interview. Some questions were not answered by all respondents, indicating inconsistencies across interviews. Also, the interview questions asked respondents to remember their past mindset; obvious difficulties are associated with recall of factors leading to a decision. Decision making is often an unconscious process. Discussion brings it into conscious awareness and can lead to distortion, especially toward making the process appear very rational.

Results

Overall Goals and Impressions of the Analysis

The goals of the interview analysis were to determine which factors were important to the enlistment decision for the entire sample, for the positive and negative propensity groups, and differences between the two groups. Pertaining to the negative group, another goal was to determine the factors that influenced enlistees to change their minds and to decide to enlist.

Propensity

Measures of enlistment propensity were based on the following two questions from YATS, but were adapted by asking respondents to think back one year prior to their enlistment dates:

- *YATS unaided question:* If someone had asked you, "What do you think you might be doing after you get out of high school," what would you have said?
- *YATS aided question:* Again, thinking back to that time and your plans, if someone had asked you, "How likely do you think it is that you will be serving in the military in the next few years," what would you have said?

Eight (57%) of the respondents were negative propensity one year prior to enlistment, while six (43%) were positive propensity. In the positive propensity group, some respondents had grown up with a family member in the military. The military option seemed to be a consideration for them since an early age. They suggested that the military way of life was familiar to them or was a family tradition. They also seemed to give more thought to their options and to weigh the advantages and disadvantages more (or at an earlier age) than their negative propensity counterparts. The negative propensity group was more difficult to characterize. For the entire sample, money was an important issue, and school seemed to be a consideration for most.

Demographics

The entire sample ranged in age from 17 to 21 with a mode of 18 (6 respondents). The sample was mixed in race/ethnicity: 7 were Caucasian, 3 were Black, 3 were Hispanic, and 2 were other. All but one was single (positive propensity). All had a high school education, and two had some college. All rated themselves as average to above average in school ability, compared to their friends and others their age. Grades ranged from As through

Ds. Most lived with their parents or a parent and stepparent (72%). Many had siblings in the household. Half (50%) of the respondents had jobs (although many were about to deploy so they may have recently quit).

The education levels of the parents for the entire group varied considerably, with the father's education slightly higher than the mother's. The parents' employment was mostly in blue-collar jobs.

Six respondents were in the positive propensity group; four of them mentioned the military in the retrospective unaided question. Eight were in the negative propensity group. The positive propensity group had a good dispersion of scores for perceived school ability. However, all but one of the negative propensity group rated themselves as average in perceived school ability.

Profiles of Personal Characteristics

Respondents had a wide range of personal characteristics. Many expressed interest in sports and hobbies. Their personality profiles ranged from planful to spontaneous, introverted to extroverted. Most reported themselves as being active and somewhat extroverted.

Plans One Year Before Enlistment

The interviewees' plans before enlistment differed with their expectations, ages, schools, jobs, and likelihood of enlisting.

Expectations. Respondents in the positive propensity group reported thinking that they would most likely go to school (5 comments) or into the military (4 comments). Only one comment from this group indicated the possibility of working at a job. On the other hand, respondents in the negative propensity group reported that they would either be likely to go to school (7 comments) or work at a job (4 comments). These categories are not mutually exclusive; some respondents commented multiple times. Therefore, these expectations must be used with caution. However, the groups do seem to differ in their consideration of options.

Age. The groups also differed in the age when the respondents considered the military. Three in the positive propensity group reported thinking about joining the military for their entire lives and two since junior high school; only one mentioned "recently." All in the negative propensity group who answered this question (7 respondents) reported thinking about joining the military only in high school or after.

School. All eight in the negative propensity group considered going to school, as did all except one (83%) of the positive propensity group. In the entire sample, all but one of those who answered (13 respondents) thought their chances for being accepted were almost certain or likely (92%). However, only 62% (8 of 13) of those responding thought that financing a school education was almost certain or likely. Most family members, peers, and other people in their lives were supportive of them going to school.

Jobs. Of those who responded, 62% had not considered taking a job. The proportion was roughly the same for both propensity groups. Both groups viewed the job option less favorably than the school option.

Enlisting. Almost all who responded (89%) reported that they were almost certain or likely to be accepted for military service. The most popular perceptions of the military were that it was a challenge. Concerns were also expressed regarding the rigor of basic training, and comments were made about lifestyle change issues (viewed positively and negatively), and having new opportunities to meet people. The positive propensity group frequently mentioned salary as a major positive feature. In contrast, the negative propensity group did not mention this item. For the entire sample, the important people in their lives who might influence them had mixed views of military service. Influencers who were supportive of youth joining the military were often family members with military backgrounds. Influencers who were not supportive of youth joining the military frequently were not supportive because they did not want the respondent to leave.

Pursuing Options

The interviewees described their pursuit of education, job, and military options.

Pursuing the education option. Some activities in pursuit of education were school sponsored. For example, some respondents worked with a school counselor and used a career center. A number of respondents explored education by visiting schools, sending applications, taking college entrance examinations, and so forth. After getting information about schools, all of the respondents perceived their liking of this option as ranging from remaining the same to becoming much more positive. When they changed opinions, they reported lack of money or inadequate grade point average as the reasons (they seemed to include feasibility in their perceived liking ratings). The respondents varied considerably regarding how likely they thought they would be accepted after they got the information.

Pursuing the job option. The respondents had done very little to pursue job goals. Only four answered this question; thus, data are limited on this topic.

Pursuing the military option. The positive propensity group did many things to pursue military goals; many of these activities involved recruiters. After getting information, 77% of the respondents reported being somewhat more or much more positive about their perceived liking of the military. The negative propensity group had the greatest shift in their opinions, with 100% reporting thinking they would like the military more or much more. The positive propensity group had only 50% positive shift. Of the negative propensity group, 71% thought they were more likely to be accepted compared to 40% of the positive propensity respondents. The information that changed their minds included hearing about military benefits, working conditions, and training opportunities. Other reasons were their expectations for personal and professional growth.

Discussion

Cognitive-based interviews often produce very rich and detailed descriptions of procedures and internal states. Large samples are not needed for these cases; in fact, some cognitive models are based on the introspection of a single individual. These enlistment propensity interviews, partly because they are retrospective, did not produce the level of detail that would be required to develop a detailed cognitive model of the decision process. Furthermore, the small sample size does not allow us to draw inferences about the population of recruits in general. Nevertheless, there are some notable results that could be used to influence the design of a propensity survey.

The expectation and temperament items provide some useful information for future surveys. Expectations changed dramatically over the year for those youth who initially showed negative propensity. Because these items were given in an open-ended interview format, they would require modification before they were used in a telephone-administered survey.

Negative propensity youth had little knowledge of basic facts of Army life one year prior to their enlistment. The information that they obtained during that year had a positive impact on their impressions of military life. This result indicates that military knowledge may be a useful area to assess in a propensity survey. Negative propensity, when it is based on ignorance, can be overcome with information, as the interview results suggest has happened in several cases. The results also reinforce the importance of early recruiter contact to provide knowledge necessary for the youth to make informed career choices.

FOCUS GROUPS

We conducted focus groups with male adolescents and parents of male adolescents in order to inform the questionnaire design phase of the overall project. The goals were to:

- develop better measures of the propensity construct;
- develop measures with which to segment the population of interest; and
- better understand the career decision-making process.

The primary purpose of the focus groups was to provide input to the questionnaire design; the focus groups were *not* designed to provide a representation of American youth or their parents. Focus groups provided thoughts and opinions of persons in the target populations, including the possibility of recent developments. The results of the focus groups generated ideas for the survey instrument. These results either *validate* or *supplement* the existing base of literature on the subject.

Instrument Development

The first steps were a literature review, examination of previous studies, and review of the questionnaires used during structured interviews with a sample of DEP recruits. The literature review focused on the differences between this current youth cohort and previous cohorts. Some conclusions from the literature were:

- this youth cohort requires a visible escape route from a job;
- this group has values that focus on personal and family life, more so than on work;
- this group is accustomed to material gain;
- advertising that was effective with the previous youth cohort ("baby boomers") is not effective with this youth group;
- this group values task variety; and
- although parents may not be aware of it, they are primary influencers of this youth cohort.

A discussion guide was developed from the project goals, available literature, and discussions with ARI representatives. The discussion guide was organized into eight sections:

1. The first section included standard focus group instructions and discussion. These included administrative information (such as the presence of a one-way mirror) as well as ground rules for discussing topics (such as the value of participant opinions).
2. The second section served as a "warm-up" question. The "warm-up" question serves as a participant introduction, and allows participants to become accustomed to hearing their voices in a group setting. We asked participants to discuss their (or their children's) current activities (e.g., school, work and extra-curricular activities).
3. The third section focused on the future plans of the youth. This topic is central to any discussion of the military as a career. The enlistment decision can only be discussed in

the broader context of careers in general. Multiple topics were used to elucidate how the youth chose that plan, whether the plan was likely and preferable, what steps were necessary to achieve that plan, what obstacles could impede their progress, and why the youth desired *that* plan, as opposed to others.

4. The literature has noted that youth are influenced by their parents, but parents may not perceive this influence. The fourth set of questions asked whether the youth were influenced by family, what sort of aspirations their families had for them, what sort of support they received and did not receive from their families and how they felt about moving away from home. The latter came from a theory that one reason some youth shy away from enlistment is separation anxiety.
5. The fifth section focused on career images. Some literature has focused on the measurable differences among youth who enlist, who work after high school and who attend college. We asked youth to compare and contrast these three options to determine whether we could create a composite of each type.
6. The sixth section asked youth to discuss actual enlistment behaviors, such as talking with a recruiter or watching an advertisement. Youth were asked to discuss how these interactions had impacted their views.
7. The seventh section focused on job attributes. One set of questions asked what attributes youth would like in their ideal jobs; a second set asked youth what they thought the military would offer. We developed this section from the literature, which states that this cohort of youth wants different things from work than the previous Baby Boom generation wanted. We felt that this information could assist recruiters in tailoring their messages to this new youth group.
8. Most focus groups include some wrap-up question, which allows participants to summarize their feelings on a topic. We asked participants to discuss the advantages and disadvantages of enlistment in the military.

The discussion guide for the parent groups paralleled the youth guide, but question wording was tailored to capture the parents' perspectives. Appendix B presents both discussion guides.

Method

Design of the Focus Groups

Focus group participants were recruited from the Washington, DC (WDC) area. Their selection was targeted to obtain information needed for the research goals; they were not presented as representative of the U.S. population. African American youth were of particular interest, in part because of the marked decrease in their enlistment propensity. School location was a reasonable proxy for race/ethnicity and socioeconomic status in the WDC area. The youth were divided into two groups: male youth who attended public high schools within the District of Columbia; and all other male high school students in WDC

(i.e., those who attended private schools), and students from the Maryland and Virginia suburbs. Focus groups from within the District of Columbia were almost entirely African American, while focus groups from outside the District were almost entirely white.

A total of eight youth focus groups were conducted. Five groups were conducted with students of WDC public high schools (hereafter referred to as the WDC groups), and three were conducted with students from other schools (hereafter referred to as the non-WDC groups). This uneven split was purposeful and was undertaken for three reasons. First, we believed that the WDC groups would be less likely to voice their opinions (thus needed more groups to obtain the opinions). Second, it was unclear whether the race proxy (i.e., school location) would indeed yield high proportions of African American youth. Third, the suburbs and the private schools included students who would generally not consider enlistment. The private school students typically come from affluent professional families and may not be effective recruiting targets.

The same African American male moderator conducted all eight youth groups to maintain a consistent style across the groups. We felt strongly that the moderator should be African American to limit interviewer-respondent race bias in the WDC groups. Further, it was important that the moderator should be a male in order to match the gender of the participants.

In addition to the youth sessions, four parent focus groups were conducted. Groups were mixed with parents of boys in the WDC public high school system and parents of boys in suburban and private high schools. There was also an attempt to obtain a split of mothers and fathers, a split on the ages of their sons, and a split on parent race.

The four parent groups were conducted by a young white female. The same moderator was used for all four sessions to maintain continuity. Moderator race was not an issue because the sessions were designed to include parents from all racial/ethnic groups. We believed that the young age of the moderator would indicate that she was not knowledgeable on the topic at hand (i.e., being a parent of a teenager). We felt that this would lend itself to discussion that might otherwise be taken for granted.

The selection of the focus group facility was driven by location. Given the age of the primary target population, we selected a facility that was easily accessible by public transportation. In fact, the chosen site, in Bethesda, MD, was the only facility in the metropolitan area that was directly accessible by Washington's Metrorail system.

Participant Selection and Recruitment

Youth and parents of youth were recruited by the focus group facility staff using their database of local residents. Contacts maintained with school officials, churches, and guidance counselors were also used to assist the recruiting process. Recruiters used screeners provided by Westat to select on characteristics of interest.

A total of 78 male youth participated in this study. As mentioned previously, African American youth were of particular interest. Therefore, this study had disproportionately more African Americans than are in the general population. Also, because the groups were limited to 17-19 year olds, only high school juniors and seniors participated. This age bracket was chosen because these youth are in the midst of the career decision-making process.

The parent focus groups had 37 participants. The composition of these groups were nearly evenly split on gender and race. Specific demographic breakdowns of the youth and their parents are shown in Table 11.

Table 11.
Demographic Characteristics of Focus Group Participants

Youth		Parents	
Race		Race	
Black	28	Black	17
White	47	White	19
Other	3	Other	1
High School Grade		Gender	
Junior	15	Female	20
Senior	63	Male	17

Analysis

Focus group sessions were audio taped, and these tapes were transcribed. Analysis of the focus groups began with the reading of each transcript. This preliminary reading offered a global view of the major themes addressed by participants. Next, data reduction techniques transformed the raw data (the written transcripts) into more manageable sets of information. Participant comments were categorized, and similar comments placed in clusters, representing topic areas. This process was an iterative one: as new comments were read and categorized, clusters were sometimes narrowed or broadened to reflect the inclusion of the additional information. After the raw data were reduced, the resultant information set was examined. The general themes uncovered during the first phase were then developed more fully, and differences across the different focus groups were also examined.

Results

Many issues were discussed in only one session, which does not necessarily mean that the issue was unimportant. In the sessions, one participant would state an issue, and then others would respond; the topic would take on some importance. However, if that original participant had not brought up the topic, the session would follow a different path. Because few sessions were conducted, it was difficult to determine which issues were important across groups. Although there was often consensus within groups, there was little consensus across groups. We do not see disagreement across groups, but the sessions tended to focus

on different areas. This lack of consensus was an even greater problem with the youth sessions because the youth seemed less able or willing to share ideas within the group setting.

Current Status and Future Plans

Session participants were asked to discuss their (or their son's) current work and school status. Moderators asked about the youth's interests and academic performance. These questions served as a session warm-up and provided the moderators with background information with which to form later questions. Youth and parents were then asked to discuss future plans.

Youth. In relating their current employment status, youth reported holding a wide variety of part-time jobs. Service-oriented jobs were commonly mentioned (e.g., retail cashiers, food service workers, and camp counselors). Professional and medical internships were popular, as were jobs obtained through various DC summer programs. This pattern of employment may be unique to the WDC area (due to the many federal government programs available to local urban youth) or at least unique to urban centers in general. WDC groups were more likely than the non-WDC groups to mention internships and other professional jobs. The WDC groups were also more likely to report manual labor employment.

Youth also discussed their plans for the future. College attendance was by far the most commonly mentioned across all sessions. There was somewhat more discussion of college plans among the non-WDC group than among the WDC groups. Youth also mentioned specific college majors when discussing their plans: engineering, computers, business, and medicine. A small portion of youth expressed plans that diverged from this college track. They mentioned trade schools, culinary schools, and beautician training as alternatives to traditional education. These vocational opportunities were mentioned more by WDC youth than by non-WDC youth.

In talking about their future plans, youth were able to provide some of the steps necessary to reach their goals, although it was unclear whether they will successfully complete these steps. Youth perceived many obstacles that may decrease their chances of success. Obtaining financing for college was the only obstacle mentioned during the majority of sessions (more than four).

Most other obstacles were mentioned disproportionately by one group but not by the other. Getting shot, associating with the wrong crowd, fathering a child, and falling behind in school were seen as obstacles by the WDC groups. This group of youth also cited more general obstacles such as "my own self" or procrastination. One youth described violence in his life: "For me, the only thing that I feel that is going to hold me back is being at the wrong place at the wrong time. I say that because on the street that I live on there's a lot of shooting that takes place, and I could just be going down to the corner store and something could happen and all of my dreams could be gone in one breath. Other than that, the only thing that is going to hold me back is me." Four non-WDC youth in one of the sessions mentioned generally "getting into trouble" as a potential obstacle. Six youth in the same session said that getting accepted to their college of choice was their primary obstacle (no WDC youth

described their obstacles in this way). As one non-WDC youth described his uncertainty, "I think probably depending on where I were to get admitted to college because the college you get admitted to will somehow indirectly affect your future."

During the discussion, the youth named many specific colleges. Non-WDC youth were more likely to mention the top-ranking colleges, Ivy League schools, and the larger universities. WDC youth, however, were more likely to mention traditionally African American universities. The non-WDC groups were more likely to specify names than were the WDC groups, indicating that the non-WDC youth had thought more about college enrollment. Because non-WDC youth were also more likely to mention college plans, this observation seems to be an appropriate conclusion.

Parents. Parents also discussed current and future plans of their sons. They focused on the current successes or failures of their sons and the likelihood that they would achieve their goals. College was commonly mentioned when discussing their sons' future plans. Interestingly, future plans that included the military were mentioned more often by parents than by the youth.

Parents were also asked to discuss potential obstacles for their sons. Again, money for college emerged as a concern for parents, as it had for youth. Lack of drive was also cited as a potential obstacle, but this was mentioned by a much smaller number of participants. Peer pressure was also mentioned in the context of potential obstacles. (This perception is further discussed in the next section about influencers.)

How Family Fits Into the Decision-Making Process

Participants in the youth sessions were asked about whom they thought when they heard the word "family." This question was relevant because of the current decline of the prototypical, nuclear family. Session participants were then asked to discuss the impact of family on youth decisions. Participants were also asked to discuss the impact of others (e.g., peers) on the decision-making process.

Youth. Youth were asked to discuss their family relationships. There were obvious differences between the non-WDC and WDC youth on family composition. Consistent with what we know from other sources, more non-WDC youth mentioned that they lived with both parents; WDC youth were more likely to mention mothers and grandmothers and uncles and cousins. The non-WDC youth also mentioned more types of people when asked to list influencers. Finally, more non-WDC than WDC youth indicated that their fathers were an influential part of their lives.

Youth also discussed the different types of advice and support they received from family and others. Mothers and other female role models were perceived as more vocal than were their male counterparts; fathers and other males were perceived as leading by example. It is notable that youth perceived this advice favorably more often than not. Youth were also asked what they thought their families wanted for them. Freedom from financial worries and a college degree were mentioned in a few of the sessions. Numerous youth in one of the

WDC groups responded that their families wanted them to stay out of trouble. The most common responses in both the WDC and non-WDC groups were vague: happiness, being successful, and doing the best you can.

Unlike family, the influence of friends was seldom discussed. When friends were mentioned, the participants generally discussed warnings that friends can lead you down the wrong path. As one WDC youth said, "You want to stick by your friends, but I mean if you got an opportunity to go to college or something you got to go. You've got to put your friends to the side and tell them that you can't do all that hanging no more because you've got better things to do." Only one youth specifically said that he listens to his friends before his family. Discussion of friends, while infrequent, was somewhat more prevalent in the WDC groups.

A 1990 Gallup poll⁹ of teenagers found that 87 percent of the respondents thought that "today's teenagers are influenced a great deal by friends." This was the highest of all influencer groups; 51 percent of respondents said that teens were influenced a "great deal" by "home." There may be a definite difference between what the youth holds true for himself and what he perceives for *other* youth. This may be a similar dynamic to results from recent polls that show that Americans are optimistic about their own economic situation but are negative about U.S. economic prospects in general. What one believes is true for one's own personal circumstance does not necessarily translate to perceived circumstances of others.

Parents. Parents also expressed concern that peers can have a detrimental effect on their sons. However, unlike the youth, parents pointed out that peer pressure can also have positive outcomes. A few parents mentioned that their sons had recently "gotten into the right crowds." These youth groups tended to be college-bound and focused on academic achievement. These peer groups served as a positive influence on their sons' plans. More often, however, parents expressed unease that their sons could be swayed from the correct path. Three of the four parent sessions included some discussion of the potential impact of peers.

Parents seemed less certain of their role as influencers. One parent spoke of "teachable moments". She described this almost as a furtive way to impart advice or information to her children. Another mother spoke of carpooling as an excellent way to eavesdrop on her children. A father spoke of frustration with his perceived lack of influence on his son; this father believed that if he advised his son to do "X", the son would do "Y".

Proximity to Home

It had been suggested that one reason youth were disinterested in the military was due to attachment to home. Participants were asked how they (or their sons) felt about the decision to leave home.

Youth. A large majority of youth planned to leave the WDC area. They offered a host of reasons, including the desire to explore new places and the ability to grow as a person.

⁹ The George H. Gallup International Institute. *America's Youth in the 1990s* (1993). p. 30.

Many WDC youth mentioned violence and trouble from the streets as reasons for vacating the area. Conversely, non-WDC youth voiced a more generic dislike of WDC and spoke of moving away to college, but "not *too* far" away.

Parents. Parents who resided in the District of Columbia also expressed fear for their children. There was only limited discussion on whether their children would move away from home. Comments on this topic were mixed: a few parents expressed a desire for their children to remain at home, and others wanted their children to move away.

Career Path Images

To explore how people perceive different career options, participants were asked to describe people who follow various career paths. Participants were asked to describe the prototypical college student, worker, and military member. Discussions focused on descriptions of these people, possible motivations, and positive and negative aspects of each path.

Youth. Participants were asked about their image of people who work straight out of high school. Some youth said workers might be more mature and were likely to be hard-working individuals. One youth added that he may have an immediate desire to earn money (especially if he "got a girl pregnant"). However, youth in one session perceived that the worker's employment was somewhat precarious because if any mistake was made, the worker could be fired. As one respondent observed, the situation for the worker is unlike that of the college student, who has more room for error. Also, a couple of youth pointed out that the lives of workers would be less fun than those of collegians. Youth from one of the non-WDC groups described the types of jobs workers might qualify for as nonprofessionals (labor, food service, and the trades). Non-WDC youth further thought the worker's motivation might be to move out of his family's house. Generally, less time was spent addressing the typical worker than addressing the typical collegiate or soldier. The non-WDC groups spent more time discussing this topic than did the WDC groups.

A description of the typical collegian was "perfect SATs, keeping his GPA high and not filling his time with extracurricular activities, probably not having...fun in high school, but definitely wants to get into college." (Similar descriptions were offered across multiple sessions.) It was mentioned that these youth will make more money out of college than those with only high school degrees. The non-WDC youth spent considerably more time discussing their images of college life than did WDC youth. They often expressed a belief that a college degree is a minimum requirement for success in today's labor market (this was mentioned in each of the non-WDC groups); there were *no* WDC youth who described a college degree in this way. The non-WDC youth further described college as a deferment from "real" life and a time to safely investigate interests. Non-WDC youth also described college as a time to mature and grow as a person. These descriptions were not offered during any of the WDC sessions. Two WDC youth stated that collegiate stereotypes were less applicable now than they were in the past.

Non-WDC youth were generally more vocal on this topic than were WDC youth. (The reader may note a theme here: non-WDC youth were more vocal on many topics.) Obtaining

funds for college was the most frequently mentioned motivation for enlistment. This judgment was expressed by at least one participant across the majority of sessions. Another frequently cited motivation was that youth who enlisted were seeking discipline, which they lacked (this was mentioned in three of the sessions). An interesting notion that arose in two of the focus groups was that a new recruit could turn over his decision-making responsibility to someone else. For some people, freedom to make decisions is *not* desirable. One participant described his friends' enlistment motivation: "They said they did not want to have to deal with making their own decisions. They wanted somebody telling them what to do." Also discussed was a feeling that one might join for job security; that one had a "job for life" (this sentiment was expressed in two of the non-WDC groups).

Parents. Parents shared some of the same perceptions about career images with their sons. There was a belief in two of the groups that a college degree is a minimum requirement for success. As one parent said a college degree is "similar to years ago having a union card," but a few parents in two of the groups pointed out that a college degree is no guarantee of success. Parents in one of the groups added that graduates need some other skill to fall back on in today's environment of corporate downsizing.

Considerably less time was spent discussing work images in the parent groups than in the youth groups. Parents mentioned that family needs, undefined interests, and lack of family precedence could all serve as motivators to working immediately out of high school.

Some parents in each of the four groups mentioned money for college as a motivator for enlistment after high school. Parents in three of the groups added that a military tradition in a child's family could also serve as a motivator for enlistment. One mother said that her son did not have a desire to enter the military: "I think it's because in my family there weren't many men who served... there wasn't that legacy. There weren't many people talking about the opportunities the military gave them..." Finally, parents in two of the groups said that some enlistees may not know what they want to do with their future, or that they determined that college was not the right path for them.

Perceptions of the Military

Participants were asked to discuss their (or their son's) personal interest in military enlistment. Through the course of this discussion, participants generally described their perceptions about military life and offered potential theories about why interest in the military might be declining among young people.

Youth. Discussion of war and other military operations occurred in one half of the youth sessions. When the topic was uncovered, the participants usually spent time discussing it. This was one of the few topics in which the WDC and non-WDC groups paid similar attention. Among the many comments that were made over the course of the eight youth focus groups, there was only one positive comment. This comment was made by one of the only youth with positive propensity, who stated that he would be proud to die for his country. The other comments focused on fear of war, dislike for killing, and the declaration that the government is conducting operations in countries where the U.S. "has no business being." As one WDC youth

said, "Because you're over there, you're over there in somebody else's business, and they want to kill you. The people over there, let's say you go to war. People want to kill you. They're looking to kill you."

Youth also spent some time discussing their perceptions about military life. The most commonly mentioned aspects of military life concerned lack of freedom and taking orders. The non-WDC groups focused more on lack of freedom, and WDC groups focused more on the taking orders aspect of the military. Although "lack of freedom" and "taking orders" are similar concepts, the former focuses on the rejection of restricted opportunity, whereas the latter focuses on the rejection of authority.

The non-WDC youth tended to focus on what they would have to give up if they were to enlist. Lack of freedom and a feeling of being trapped were common themes. They observed that if an enlistee decided the military was not for him or that the military occupational specialty (MOS) he tested into was not to his liking, he was "stuck." Youth used phrases like "throwing your life away" and "signing my life over" to describe how they felt about the enlistment option.

WDC youth in two of the five groups discussed distaste for authority. They indicated that they were not interested in being told what to do. When asked whether military members had freedom in how tasks were completed, one youth said "Well, you ain't going to, you can't decide that. Everybody tell you, people just going to tell you what to do."

WDC youth also focused negatively on the military as an institution. There was a belief among the WDC youth that the military does not take care of its members. Two youths pointed to veterans living on the streets and unknown physical maladies of Operation Desert Shield/Desert Storm and Vietnam veterans as evidence: "This one dude he came out of Desert Storm and he said his head would be hurting every morning when you wake up. He don't know what's wrong him, the doctors don't know what's wrong with him. He frequently vomit and everything. He's just bad off but the government they ain't doing nothing for him. They won't even pay that man's hospital bill." Another WDC youth expressed a perception that African Americans are placed on the front line in greater proportions. Also, in three of the four WDC groups, the youth said that in general the military was not to be trusted.

On the other hand, the youth discussed some positive aspects of the military. Good benefits, gaining marketable skills, and the opportunity to travel were mentioned as characteristics of military service. However, it may be that youth were trying to list positive attributes in order to make their opinions appear more balanced. Also, in many of the groups, the moderator asked about current career opportunities in the military. The majority of those who discussed this topic said that opportunities were increasing. However, the vast majority of descriptions of the military were negative.

Parents. Parents offered a slightly more positive view of the military, both as an institution and as a career choice. At least one parent from each group mentioned that the Armed Services were more selective than they used to be. As one parent commented, the

military is "not for grunts anymore." In addition, a few parents pointed to development of job skills and group camaraderie as positive aspects of military enlistment.

Parents primarily focused on why youth were not interested in enlistment. Parents addressed three major issues: youth's reaction to discipline, youth's lack of patriotism, and youth's desire to change their minds.

Parents in all of the focus groups stressed that the military offered structure and discipline. They perceived that youth need these, but that youth today are not interested in discipline. One of the groups spent particular time on this issue. Participants said that youth do not want discipline anywhere in their lives. They blame this on parents and, indirectly, on schools. This group discussed that many parents do not enforce discipline in the home. They further said that teachers' hands were tied due to societal and legal constraints. One respondent added that "teachers can't discipline so the kids aren't used to discipline. They don't want discipline." A parent in one of the other groups added that "as an adult or parent we many times have waived our responsibilities, and children now are running wild." Another parent said that "kids today don't take orders. Take my son. He is not a good order taker at all... he has a real problem with it."

Parents also pointed to lack of patriotism as a factor for declining interest in the military. One of the groups spent considerable time on this topic. One parent who works in a school said that the "Pledge of Allegiance... has no significance to these children." These parents linked this decline of patriotism to the Vietnam War. Parents in three of the groups mentioned this event as having a major impact on their generation and indirectly on their children. "I think [Vietnam] affected us and our ability to relate to them as far as encouraging them [to enlist as] an alternative to college." Like youth, parents also mentioned poor treatment of Vietnam and Operation Desert Shield/Desert Storm veterans as reasons for a decline in the nation's view of the military (these sentiments were expressed in two of the four parent groups). Also, a few parents in one of the groups mentioned recent scandals as influencing the public's view of the military.

Parents perceived another reason for declining interest in the military as inability to change their minds. This sentiment was mentioned less than the other two discussed previously, although at least one parent mentioned it in three of the focus groups. As one explained, "a lot of kids aren't used to living with the results of their choices. And the problem with the military is that you're stuck with it."

Finally, parents focused on some of the negative aspects of the military. In three of the groups, parents said they perceive recruiters as editing the truth. A parent in one group said that the military "...historically has said one thing to people before they enlist. And it's a totally different story once you have signed the paper... they'll say we're going to put you in one field, and they put you where they want you to be."

Sources of Military Perceptions

During discussions about what participants believed about military life, they were asked about the sources of these beliefs. Participants talked about their proximity to military members as well as less direct sources of information.

Youth. Where did youth get their perceptions about military life? Mostly from fathers who served in the military. They also receive information from cousins, uncles, friends, movies, and experiences with Junior ROTC (JROTC). The information from these sources was more often negative than positive and often focused on the wartime experiences of a Service member. Three participants mentioned movies. As one youth said while discussing perceptions of military life, "...or you are going to get killed or something. Because them movies done put them bad ideas in your head."

Sources of information differed across the two group types. First, non-WDC youth reported fathers as sources of information more often than did WDC youth. Also, no non-WDC youth reported uncles as informers, compared with WDC youth who reported them as often as they reported fathers.

The direction of the information received from informers also differed between the two group types. Non-WDC youth reported more negative influences than did WDC youth. The ratio of negative informers to positive ones (excluding neutral informers) was about 4:1 for the non-WDC youth, compared with nearly 1:1 for the WDC youth. Also, more of the information relayed by the WDC youth was neutral in nature than the information related by the non-WDC groups. It is unclear whether these are true differences or differences in the way the two types of youth relay information.

In some of the youth discussion groups, the topic of family support of the enlistment decision was discussed. In general, youth perceived more support than obstruction for the enlistment decision. While some youth said their family would not allow them to make that decision, slightly more said that family members would support their enlistment decision, irrespective of their personal aspirations for the youth. Some youth said family members have actively discussed the military as a career option with them, although the youths did not reciprocate the interest.

Parents. Parents did not discuss sources of perceptions directly. It appeared that most of their perceptions were tied to experiences from the Vietnam War era. Some parents in two of the groups said that movies were a likely source of influence on youth. The general conclusion was that these movies provided negative images to already scared youth. As one parent put it, "if you think about it, who, after watching one of those movies, who would want to sign up?"

Job Attributes

Participants were asked to discuss which job attributes they valued most for themselves (or their sons). This discussion focused on a predetermined list of 12 job attributes (Appendix

B has a list of these attributes). Each participant was provided with a stack of these 12 attributes typed on cards. Participants were asked to place the attribute cards in their order of preference. Placing a card at the bottom of the pile did not necessarily mean it was entirely unimportant; but it was unimportant *relative* to the other attributes in the stack. The primary focus during the discussions was generally on the top two and the one lowest ranked attributes.

Youth. Overall, youth indicated that pay was the most important job attribute to them. This attribute was followed by job security, benefits, and a job that allowed time for one's personal life. However, these ratings differed for WDC and non-WDC youth.

Although "good pay" was mentioned more often than other attributes among both WDC and non-WDC youth, it was far and above the most frequently cited among the WDC youth. In the non-WDC groups, however, it was considerably closer to the frequencies of other popular attributes. In some cases, participants defined what was meant by "good pay." There were numerous responses, ranging from \$9 per hour out of high school to \$100,000 annually upon graduating college. The median of the response array was \$35,000.

There were other differences across the two groups. For instance, only one youth from the WDC groups mentioned a desire to work in an organization that appreciated employee ideas. However, youth in each of the three non-WDC groups expressed that this was a very desirable attribute. Also, non-WDC youth were more likely than WDC youth to express a desire for job security. Non-WDC youth also cited challenging work, freedom to decide how work is completed, and likable coworkers as more important than did their WDC counterparts.

The reader should again be cautioned that the job attributes were provided to participants; they did not develop the list themselves. Therefore, we cannot be certain whether these attributes were actually salient to them before we introduced them.

Youth were then asked to discuss job attributes that were not valued or that were less valued than others that were presented to them. Work location, liking coworkers, and a job that looks good on one's resume were generally perceived as less important. There were differences across the two group types. However, due to less discussion on this topic, it's difficult to determine whether these differences are meaningful.

Parents. Parents spent considerable time thinking about the job attributes they would want for their children. The most popular response to the question of desirable job attributes was job security. Good pay was not far behind. (Note that about one in four of the participants offered security or good pay as either their number one or number two choice of desired job attributes.) One parent stated that job security was probably not as important to youth, although another said that youth saw adults being laid off from jobs and that job security would be important to them. Another parent ranked it "way down there, because I don't think it's realistic anywhere to expect job security." Finally, about one in five said that they wanted their child to find a job with good benefits. Although, one parent felt that youth "don't think about benefits." Less important were company location, resume building, and likable coworkers. (Close to one third of the comments were directed at the former two, and about one fifth mentioned the latter.)

Military Offer

Participants were asked to discuss which job attributes they thought would be available in military jobs. The same list of 12 attributes was used for this portion of the focus group. Again, participants were asked to rank attributes, except this time they were asked to rank them based on what they believed the military offered. Primary focus generally remained on the two top-ranked and the one lowest-ranked attributes.

Youth. After youth were asked about what they wanted in a career, they were asked to discuss what attributes could be found in military jobs. They most frequently mentioned benefits, development of skills, and job security. On the other hand, the youth never identified time for personal life, encouragement of employee ideas, liking one's coworkers, and freedom to decide how work is completed as attributes of the military. Overall, there were no notable group differences, except for a greater prevalence of the job security attribute among the non-WDC groups.

Youth were also asked what job attributes the military did not offer. As expected, many of the attributes that received *no* mention for what was *found* in the military received many mentions for what was *not found*. These included time for personal life, encouragement of employee ideas, and freedom to decide how work is completed. Location was also a popular response here, as was liking one's coworkers.

There were few differences across the two group types. A higher portion of non-WDC youth mentioned that time for personal life would not be found in a military job; considerably more WDC youth mentioned that likable coworkers were not available in the military.

Parents. Parents spent more time than youth discussing their perceptions about attributes of military jobs. Responses focused on benefits, skills development, and job security. These three attributes dominated the discussion; only four participants across all four groups mentioned different attributes. Parents offered more varied responses when asked what attributes were less likely to be found in the military. The most common response was that the military did not allow members the freedom to decide how their work should be completed (less than one in three comments). Parents also felt that military jobs did not allow members much time for family or personal life (about one in five comments). About one in six comments focused on the military as discouraging members from offering new ideas. As one participant stated, "creativity is not a priority" in the military. Finally, about one in seven comments focused on undesirable work location as a potential downside of military enlistment.

Suggestions for Change

As a session wrap-up, participants were asked to discuss how the military might stimulate interest in enlistment. This question, while not directly applicable to propensity measurement, was included to provide policymakers with some ideas of potential ways to impact propensity.

Youth. Most of the responses from youth focused on changes to the recruiting process. Also common were changes that are termed here "specific performance." These suggested changes focused on Service-member duties and compensation such as increased pay. At least one youth in one half the groups said that the military should be more up-front in its recruiting practices. Two participants suggested reaching youth in elementary school and junior high, and two suggested requiring fewer changes of station. However, the majority of suggestions were offered by only a single participant. Some of these included offering more office-related jobs, stressing how civilian employers view the military on resumes, and showing more African Americans in positions of power.

There was one primary difference between the WDC and non-WDC groups. Non-WDC youth were more likely to suggest that the military "lighten up" and provide more freedom to Service members (approximately five non-WDC youth in two of the sessions made this suggestion; compared with a single WDC youth). However, in each of the three non-WDC groups, more than one participant said that the military should not change this aspect of military life to suit potential recruits. They felt that changes could result in a less capable military. These youth felt that the effectiveness of the military was of some importance, and therefore, changes were not advisable. There were no WDC youth who expressed these sentiments.

Parents. The parents spent considerably more time generating suggestions for the military than did youth. Since this portion of the protocol occurred at the end of the sessions, time constraints were often greatest here. There was little time for discussion on this topic in two of the parent groups. About 8 in 10 suggestions discussed below were offered in two of the four parent sessions.

The most common suggestions focused on honesty. Parents reported in three of the groups that the military and its recruiters were not entirely "up-front" with potential recruits. One parent of an older child who had actually enlisted in the military echoed this thought. When asked whether her son had believed what the recruiters had told him at first, she said "Oh, yeah. Jonathan definitely did. He was very disappointed." The parents felt that this perceived dishonesty on the part of the military could have a negative impact on current recruiting efforts. As one parent added, "word passes between the kids. As we call it in the black community, [the] drum." A parent in one of the other sessions said the military has "to be able to tell these kids what is ahead of them. They have to tell them the truth. They have to tell them, 'we can offer you this, but you got to go through this first.'"

A class of suggestions focused on tangible recruiting activities. Parents in one of the groups spent some time discussing *who* should represent the military at high schools. They believed that young Active-duty members and veterans who have entered the civilian workforce would be better able to impartially articulate the military offer. These emissaries would act as outreach vehicles for the military.

Parents in this group also focused on the *when*, or the timing, of intervention. These parents directed the military to enter the schools earlier. As one parent said, "at the same time things are starting to think about college, they should have the military in there. And you're talking to your kids about college, like you said, in junior high."

These parents also focused on *how* to recruit. Parents said that counselors, teachers, and parents must be influenced in order for the military to have greater impact on youth. Some parents felt that counselors and parents do not generally consider the military as an option. When asked how youth perceive the military as a career option, one parent said, "My perception is there's really no perception at all. No one discusses it with our young people, I mean so they don't perceive it as being an option because it's just not talked about."

Parents in two other groups elaborated on how to influence parents. A few parents in each group said that advertising targeted to parents, particularly mothers, was important. One father summarized "from what I've heard at the table here [is] go after mom... Those commercials [are] great, coming down on a rope of a helicopter, it's fine, it's real macho, [and] I am sold... but I have the image of a ... mother saying something ... positive about the military experience for [her] son or for her daughter." A parent from another session added that a personal touch is also needed to garnish parent support. He suggested the military operate "just like the college recruiters do, who come to the houses to recruit our kids for sports."

One of the parent sessions focused more on the lack of perceived freedom afforded members in the military. One parent suggested "opening up the sense that the military is not as much of a drudgery and it's not as dominating into your life. It gives that air, that once you're in, for 2 years or 4 years, you're dominated. You have no control. So you have to give the people that do decide to sign up the flexibility to decide what area they want to concentrate in, where they might want to be stationed, how long they want to be stationed here." One parent added later that the military has "got to get with the times. This rigidity we keep saying is just not going to work today."

Parents in this session also focused on current advertising as conjuring images of war that may scare many youth away from the military. As one parent's son was described, "I think he just sees the fighting and the war part of it. And that scares him." These parents countered that the military offers many opportunities that are not directly related to combat maneuvers. One parent said that "war military actions and maneuvers and what have you, that's a very, very small percentage of what the military is all about." Parents felt that ads should also focus on the skilled jobs that are available in the military; for example, dental hygienists, plumbers, and electricians. One parent viewed current advertising as if the advertiser is trying "to make it look like you're in a movie." Another parent added, "I think they start out with, 'Do you want to be in control of a nuclear submarine?'"

Parents in one of the sessions focused on societal change as a source of declining interest in the military. They felt that patriotism was no longer a predominant facet in America. They believed that the military needs to make youth feel more a part of the country; parents were unable to offer specific suggestions on how this would be accomplished.

Summary

It seemed clear from the youth that the family was a primary source of advice and information about the world and about career decision making. However, it was not clear whether parents perceived the strength of their influence.

A consistent finding across both WDC and non-WDC youth and their parents was the desire for a college education. A college degree was portrayed as a minimum requirement for success in the modern job market. Parents and youth added that one way to obtain funds for college was enlistment in the military. However, while the military was perceived as one vehicle for eventual attainment of a college education, it was not generally perceived as a *personal* option for the youth we interviewed.

Most parents did not explicitly offer the military as a career option to their children. It appeared this was in part due to negative public sentiment stemming from the parents' experiences during the Vietnam War era. It also seemed in part due to availability of other career options. Most of the youth and most of the parents felt that college was the appropriate option. In addition, there was the sense that enlistment would delay desired career paths; therefore, loans or scholarships were preferable to the GI bill.

Both youth and parents perceived that most young people do not relish the idea of giving up control over one's destiny. Youth wanted the ability to change their path in midstream; enlistment was perceived as eliminating this ability. Such sentiment parallels the available literature on this youth cohort.

Yet another impact on the enlistment decision concerned a perceived mismatch between desired job attributes and what the military was perceived as offering. Good pay was desired, but was not often viewed as a characteristic of military employment. The youth also discussed that time for personal life, encouragement of employee ideas, and freedom to decide how work is completed were not generally available in military jobs, and they indicated that they were not enthusiastic about sacrificing them. The single match between desired traits and the military offer was job security. Job security in the marketplace was viewed as a definite concern of both parents and youth. This may be a potential area for exploitation.

Youth and parents offered suggestions to the military on how to more effectively recruit youth. Greater visibility of military members to younger school children was mentioned as a way to counteract a lack of personal ties to the military. Youth in the non-WDC groups discussed freedom in the military. Some suggested providing more freedom to members, but other youth disagreed, saying that lack of freedom was a necessary characteristic of military life. Also, parents and youth agreed that the military had a reputation for misrepresenting itself to prospective recruits. Parents further discussed societal changes since the Vietnam War, and that patriotism has been lost on this generation. Finally, parents recognized the importance of reaching influencers, particularly mothers, they did not believe that current advertising was effective in reaching them.

We cannot be certain which of the findings from this study can be applied directly to the national population. Focus group participants were confined to residents of the metropolitan Washington, DC, area, and African American youth were overrepresented. However, these findings provide a window into what Washington, DC, area youth and parents perceive about the career decision-making process and how the enlistment option fits within this model. The conclusion of this study is that, generally, the military is not perceived as a viable option for many WDC area youth.

FINAL CAREER DECISION SURVEY

In recruiting, the ultimate market is that segment of the American population that is qualified, available, and interested in military service. The final survey attempts to increase the level of understanding of these three factors and thereby help recruiters and advertisers become more efficient and effective. The ultimate goal is to ensure that the recruiting commands are successful in meeting their objective for sustaining the Military Services with the appropriate personnel.

For an individual to be qualified for military service, he or she must be qualified along three dimensions: mental aptitude, moral character, and physical condition. The Services have established minimum acceptable standards for each of these dimensions and in most cases, an individual is either qualified or disqualified. Some exceptions to these rules include "temporary disqualifications"—for example, a candidate has a broken arm that will heal without any permanent damage at which time the candidate will again be qualified—and disqualifications that can be "waived" by a senior recruiting official—for example, some minor infractions of the law. The individual recruiter has very little control over candidate qualifications, but by increasing the efficiency and accuracy of preliminary qualification screens we can potentially increase the efficiency and effectiveness of the individual recruiter.

Availability also is a dichotomous variable, because a candidate either is or is not available. The two most frequently cited reasons for being unavailable for military service are work and school. Again, this is an area in which the individual recruiter's influence is somewhat limited, but from the recruiting command perspective a greater understanding of the factors involved in availability could be valuable in advertising campaigns.

The influence of advertising and the individual recruiter on the "ultimate market" and the individual is greatest in the area of interest. An individual's interest in the military, while often reported as a dichotomous variable (e.g., positive or negative propensity), is actually a continuous variable. There are many factors which may influence a person's level of interest in Military Service. By increasing our understanding of the factors that influence an individual's interest in Military Service through the development of a better measure of propensity, we may be better able to prepare recruiters, increase the effectiveness of advertising campaigns, and predict the future market of individuals for Military Service.

Measurement Development

Development of the Item Bank

In preparation for item bank development, we reviewed a number of related surveys of American youth to identify concepts that could potentially predict our three major areas of interest--qualified, available, and interested in Military Service. We used an iterative process of selection, review, and revision of items from these related surveys.

We reviewed the following surveys:

- The National Assessment of Education Progress (NAEP) contains several concepts which had the potential for predicting cognitive abilities. These areas included: parent's education; support for learning, such as newspaper, encyclopedia, books; study and leisure habits, such as TV, time on homework; and high school courses.
- From the Learning and Studies Strategies Inventory (LASSI), we identified the potential use of temperament and bio-data items in predicting cognitive abilities.
- From the Monitoring the Future (MtF) study, we identified potential predictors related to interest, cognitive abilities, and physical qualification. The potential predictors related to interest (i.e., propensity) included: satisfaction, with the job, neighborhood, safety, friends, parents, etc.; importance of motivating factors, such as money, steady work, friendships, etc.; school and military propensity items; hobbies and activities; attitudes; job values; job expectations; attitudes toward military; and influences of parents and friends. In the area of cognitive ability the MtF uses self-assessments of ability and grade estimates and in the area of physical qualification the MtF uses self assessments of physical characteristics and habits.
- Other studies that we reviewed for propensity-related concepts included: Student Testing Program Evaluation; High School and Beyond/National Education Longitudinal Study (HS&B/NELS); the Air Force Self Description Inventory; and Assessment of Background and Life Experiences(ABLE).

From these reviews, we identified concepts with potential as predictors of the three factors of interest (see Table 12).

Items from existing surveys were modified to fit the sampling frame and to be appropriate for CATI implementation. The original number of items from existing surveys far exceeded the number of items possible for inclusion on the final survey. Through several iterations the number of survey items was sufficiently reduced to allow for the inclusion of new items necessary to investigate the potential influences of some remaining concepts. These concepts were identified through literature reviews and inferences made from the existing measures.

Development of New Items

New items were required for several concepts that showed potential, including knowledge of the military, attitude toward the military, career preferences, and work values. Previous work conducted by ARI indicated that military knowledge and attitudes toward the military could increase the accuracy of propensity measures. Career preference items drew upon J.L. Holland's classification scheme for occupations (i.e., realistic, artistic, investigative, social, conventional, and enterprising). And finally, the work values items were developed as a replacement for (and hopefully an improvement upon) the items currently used on the Youth Attitude Tracking Survey (YATS).

Table 12
Potential Predictor Concepts

FACTORS	PREDICTOR CONCEPTS
1. Qualified:	
a. Mental Aptitude	1. Telephone Aptitude Test 2. Self-Assessment 3. Support and Activities
b. Moral Character	1. Background
c. Physical Qualification	1. Background 2. Physical Fitness
2. Availability	1. Current School/Job 2. Availability
3. Interest	1. Unaided Propensity 2. Service Propensity 3. Personality/Temperament 4. Military Knowledge 5. Attitude toward Military 6. Career Preference 7. Work Values 8. Decision Making Process 9. Background

Selection of Items

The selection of items started with the selection of appropriate items from YATS to stand as the baseline for propensity/interest and availability. Other possible predictors of propensity and items that may be able to enhance propensity estimates were than selected. We next selected items to address the cognitive ability/mental aptitude area. This concept is addressed from three directions on the survey: a telephone aptitude assessment test, self-assessment, and support and activities. Finally, background-type items were added that address physical condition and interest.

Development of Presentation Strategy

Review of the item bank determined that the survey was still too long for a single version. In response, we eliminated some items and developed a presentation strategy in which respondents would receive only a portion of the items.

In order to have a baseline for all respondents, we included the YATS propensity and availability items on all versions of the survey. Also included on all versions of the survey are background items assessing demographic variables, physical fitness, family structure, crime in the environment, and respondent and parental education. Many of these items are

necessary to make inter-group comparisons. Since the Telephone Aptitude Assessment Test has the potential for being a valuable quick-screen tool for recruiters to use with potential applicants, we opted to include it on all versions of the survey, thereby increasing the volume of normative data.

The variable portion of the survey includes items that are assessing eight constructs. These items were organized into four groups. The content of the groups is shown in Table 13.

Table 13
Grouping of Variable Survey Items

Group	Category	Description
A	Self Assessment	Average grades, high school program, classes taken
A	Personality/Temperament	Conscientiousness, Agreeableness, Extroversion
B	Military Knowledge	Percentage judgments covering Army, Navy, and Air Force
B	Attitude Toward Military	Covers discipline, safety, pay, and commitment, rated on a five-point scale
C	Career Preference	Preferences between pairs of jobs, based on Holland's taxonomy
C	Work Values	Six work values, presented in paired comparisons, maximum nine pairs
D	Decision Making Process	Thought given to career decisions, strength of preferences, on five-point scale
D	Support and Activities	Newspapers, books, computer, school activities, time watching TV

Each respondent will answer all of the fixed items and two groups of variable items. This design produces six versions of the survey, corresponding to the six ways that two groups of variable items can be chosen from the available four groups (i.e., A and B, A and C, A and D, B and C, and C and D). Each of the items in the variable portion will be given to half of the respondents. Comparisons of items in different groups will be based on 1/6th of the total sample and comparisons of variable items to fixed items will be based on 1/2 of the total sample. The master version of the survey is shown at Appendix C. Before this survey can be administered, OMB clearance is required. The OMB justification materials are shown in Appendix D.

DISCUSSION, RECOMMENDATIONS, AND NEXT STEPS

The effort in Phase I explored several different approaches to meeting the three project goals. The results of the YATS data analysis, literature and survey review, telephone test evaluation, interviews, and focus groups all provided information and insights that were incorporated into the career decision survey. This section begins by highlighting major results of the project components. Then it summarizes the plans for the second phase of the project.

In addition to the work described in the body of the report, this project included an analysis of data from the Monitoring the Future survey. A description of this research is contained in Appendix E.

Summary of Major Results

The major project components discussed in this section are the YATS data analysis, the telephone test, the interviews and focus groups, and the career decision survey.

YATS Data Analysis

The YATS data analysis supports the goal of better prediction of enlistment behavior. One of the innovations in this analysis is the development of a measure that distinguished the applicants who lost interest in the military from those who were rejected by the military. We would hypothesize that those who lost interest in the military would have lower propensity than those who are rejected, but there are several other possibilities. An applicant may have received a particularly attractive job offer or college scholarship that led him or her to stop pursuing military service. Similarly, applicants who are rejected may have high or low interest in the military. The results indicate that the YATS propensity variables do predict interest among applicants, even when differences in demographic, aptitude, and educational variables are controlled for.

The results of the analysis also indicate that there is some capability already in YATS to improve the prediction of applications or enlistment over the basic propensity measure. Talking to a recruiter, and slogan recognition both improve the prediction of the likelihood of applying or enlisting. Although these results are not earthshattering, they do indicate the potential to improve the prediction of enlistment behavior. Although these results appear to support the benefits of recruiting and advertising efforts, they do not show a causal relationship between these efforts and enlistment activities.

Telephone Aptitude Test

The validation of the telephone aptitude test supported the goal of segmenting the youth population. The correlation of the telephone test with AFQT (.78, corrected for range restriction) shows that the test may be a reasonable tool for segmentation of the population. This level of correlation implies that individuals could be assigned to high and low quality groups with relatively high accuracy. It is possible that further improvement could be obtained by including quantitative items, such as mathematical knowledge items, in the

telephone test. However, additional items will produce only limited improvement in prediction, because the correlation is already close to the .83 correlation reported between the CAST and AFQT (Knapp, 1987).

An alternative avenue for further research that may be promising is evaluating the validity of shorter versions of the telephone test. One concern about the use of the telephone in any large-scale survey is the time that is required. Because the telephone test is an adaptive test, it could be shortened and still provide a useful estimate of aptitude, although the estimate would be less precise, and consequently less valid. If the reduction in validity is too much, than other methods, based on demographic characteristics and academic activities may more effective uses of limited survey time. Follow-up studies should provide information on the relationship of test length and validity, particularly in the ability of distinguishing high and low quality youth.

Because of differences in the methods that were used, it is not possible to compare the results we obtained with the telephone test with the results obtained by Orvis and Gahart (1989) and updated by Orvis, Sastry, and McDonald (1995). Those methods predicted the probability of being in the top half of the aptitude distribution as a function of demographic variables. Since the telephone test was given to enlistees in the DEP, nearly all were in the top half of the distribution, so that it was not possible to obtain a measure that was comparable to theirs. Further research should compare the quality of these two prediction methods.

The aptitude measure was validated on recruits, who are almost entirely in the upper half of the aptitude distribution. There is a possibility that the test may be too difficult to obtain meaningful results for low-aptitude individuals. This is not a major concern, because we don't need a lot of precision in that range of the distribution. However, it may reduce the correlation, or make the relationship between the telephone test score and AFQT nonlinear. Consequently, the telephone test should be validated on a sample from the full range of the aptitude distribution. In addition, data from the telephone test might be used to improve the weighting of the sample to improve its representativeness of the national population of youth.

DEP Interviews and Focus groups

The DEP interviews and focus groups support the project goal of understanding the enlistment decision process. The small number of recruits interviewed limited the strength of the conclusions that could be drawn from the DEP interviews. However, the information provided by the focus groups complement the interviews to present a reasonably detailed, although incomplete, picture of the youth population. Both indicate the importance placed on a college education by youth and their parents, and the role that the military can play in meeting this goal. The focus groups highlight some of the costs, in terms of loss of freedom and delay in pursuing a career, that come with military enlistment.

Even in the small sample of recruits that were interviewed, there was considerable variety in the decision making process. Some had not considered their career after high school until their senior year. Those who enlisted may have been influenced by a recruiter, a

relative, or a friend. Others had considered a military career since they were quite young. The goal of the interviews was to characterize the decision process of recruits to find out ways to distinguish it from the process used by those who select other paths after high school. The interviews present a part of the story and should be supplemented by comparable interviews with youth who have entered a job or gone to college after high school graduation.

Career Decision Survey

The survey incorporates several methods for estimating propensity and segmenting the population. Survey components that are primarily concerned with estimating propensity include the following:

- personality/temperament variables,
- military knowledge,
- attitude toward the military,
- career preferences,
- work values, and
- decision making process.

Components that are primarily concerned with population segmentation include the following:

- telephone aptitude test,
- self-assessed aptitude,
- support activities,
- background information, and
- physical fitness measures.

Although the survey items were selected based on review of past research, the psychometric characteristics of items, and their relationship to propensity, quality, and availability variables needs to be determine. Phase II of this project will provide some of the information to perform this analysis, but a complete knowledge will not be available until these individuals who respond to the survey have had an opportunity to make their career decisions.

Phase II Implementation

Phase II of this effort will continue its support of all project goals. We will give the survey to a random sample of 2,000 male youth, 16-21 years old. If adequate funding is available, we will also give the survey to a random sample of 2,000 female youth in the same age range. The results of this administration will allow us to collect item statistics, and to determine which items are most closely related to stated propensity. Initially, we will have no measures of enlistment behavior, but we will perform preliminary analyses using stated propensity as a criterion. There may be some benefit obtained from an investigation of refined propensity measures, rather than the dichotomous measure that is currently used.

Investigation of the telephone test will examine the performance of shorter versions of the test compared to the full version, and the correlation of other potential aptitude measures with telephone test performance. There will be no criterion aptitude measures in this phase, so the telephone test will be used as the primary criterion. When the survey respondents have had a chance to make their career decisions, the AFQT scores will be available for those who apply for military service. Analysis of this information to determine the validity of the telephone test is beyond the scope of Phase II.

The DEP interviews and focus groups give a partial picture of the career decision process. Activities in Phase II will determine how the processes used by those who enlist differ from the ones used by those who pursue a college education or get a civilian job after high school. Since the options available to high school graduates can serve a variety of career goals, a similar decision process can produce a variety of career choices. Interviews with individuals who did not enlist will help determine which of the characteristics of recruits best distinguish them from the rest of the youth population.

REFERENCES

- Ajzen, I., & Fishbein, M. (1980). *Understanding attitudes and predicting social behavior*. Englewood Cliffs, NJ: Prentice-Hall.
- Aldrich, J.H., & Nelson, F.D. (1984). Linear probability, logit, and probit models. *Quantitative applications in the social sciences* (paper #45). Newbury Park, CA: Sage Publications.
- Driskill, W. (November 1994). *Non-cognitive research involving systems of testing and learning* (Final R&D Status Report).
- Edwards, W. (1954). The theory of decision making. *Psychological Bulletin*, 51, 380-417.
- Fishbein M., & Ajzen, I. (1975). *Belief, attitude, intention and behavior: An introduction to theory and research*. Reading, MA: Addison-Wesley.
- Jacoby, J., Hoyer, W., & Brief, A. (1992). Consumer psychology. In M.D. Dunnette & L.M. Hough (Eds.), *Handbook of industrial and organizational psychology* (Vol. 3, pp. 377-441). Palo Alto, CA: Consulting Psychologists Press.
- Janus, I.L. & Mann, L. (1977). *Decision making: A psychological analysis of conflict, choice, and commitment*. New York, NY: The Free Press.
- Johnston, J. & Bachman, J.G. (1972). *Youth in Transition: Young men and military service* (Vol. 5). Ann Arbor, MI: Institute for Social Research.
- Kahneman, D., Slovic, P., & Tversky, A (Eds.). (1982). *Judgment under uncertainty: Heuristics and biases*. Cambridge, UK: Cambridge University Press.
- Klein, G.A. (1989). Recognition-primed decisions. In W.B. Rouse (Ed.), *Advances in man-machine system research* (Vol. 5, pp. 47-92). Greenwich, CT: JAI Press.
- Knapp, D.J., (1987, November). *Final report on a national cross-validation of the Computerized Adaptive Screening Test (CAST)* (Technical Report 768). Alexandria, VA: U.S. Army Research Institute for the Behavioral and Social Sciences.
- Lerro, P., Tagliareni, F, Batley, L., & Sellman, E. (1991). *Volume 1. Summary of findings: The enlistment decision process* (Draft Final Report). Alexandria, VA: Human Resources Research Organization.
- Luskin, R.C. (1990). Explaining political sophistication. *Political Behavior*, 12, 331-361.
- Newell, A. & Simon, H.A. (1972). *Human problem solving*. Englewood Cliffs, NJ: Prentice-Hall.
- Oi, W. (1967). The economic cost of the draft. *American Economic Review*, 77, 39-62.

Orvis, B.R., & Gahart, M.T. (1989, March). *Quality-based analysis capability for national youth surveys* (R-3675-FMP). Santa Monica, CA: RAND.

Orvis, B.R., Sastry, N., & McDonald, L.L. (1995, August). *Recent recruiting trends and their implications: Interim report* (DRR-1175-A/OSD). Santa Monica, CA: RAND.

Owens, T.J. (1992). Where do we go from here? Post-high school choices of American Men. *Youth and Society*, 23, 452-477.

Savage, L.J. (1954). *The foundations of statistics*. New York, NY: Wiley.

Simon, H.A. (1957). *Models of man: Social and rational*. New York, NY: Wiley.

Tversky, A. (1972). Elimination by aspects: A theory of choice. *Psychological Review*, 79, 281-299.

von Neumann, J., & Morgenstern, O. (1947). *Theory of games and economic behavior*. Princeton, NJ: Princeton University Press.

Wilson, M.J., Greenlees, J.B., Kirkman, J., & Baker, S.L. (1997). *Fall 1996 CEDS/YATS codebook/user's manual*. Rockville, MD: Westat, Inc.

Appendix A

Appendix B

Appendix C

Appendix D

Appendix E

APPENDIX A

INTERVIEW PROTOCOL FOR DEP INTERVIEWS

Army Research Institute --Propensity to Enlist

DATE _____

Interview Protocol: Delayed Entry Program

SITE CODE _____

TIME _____

SSN _____

INTRODUCTION

Hello, I am _____ from _____. Thank you for taking the time for this interview. Our aim is to get a better understanding of the young men -- like yourself -- who enlist in the Services. My company has a contract with the Army Research Institute to provide information on the enlistment decision process. We're interested in how you decided to enlist and what you expect to get out of military service. I will be using a tape recorder during our interview. This is to help me make sure I get all your comments and report them correctly. The information you provide will be combined with information from other forms and will be included as group data in reports. The information collected is for research and analysis purposes only, and your comments to me today will be held in strictest confidence.

DEMOGRAPHIC INFORMATION

Let's start with some basic background information about you.

1. What is your birth date? _____ [Write in date. Figure age and write below.]

So, your age is _____. [State number figured from above.]

2. What do you consider your primary ethnicity? [Prompt with choices, if needed.]

- ☐ American Indian/Other Native American
- ☐ Asian or Pacific Islander
- ☐ Black or African American, not Hispanic Origin
- ☐ Caucasian, not Hispanic Origin
- ☐ Hispanic/Latino
- ☐ Other _____

[If Black or Caucasian ask:
You are _____ and not of Hispanic
origin. Is that correct?]

3. Are you single or married?

- ☐ Single
- ☐ Married

4. How far have you gone in school? [Prompt with choices, if needed.]

- ☐ Currently in high school
 - ☐ 9th grade
 - ☐ 10th grade
 - ☐ 11th grade
 - ☐ 12th grade
- ☐ High school graduate
- ☐ High school equivalent/GED
- ☐ Vocational, technical, or business certificate
- ☐ Enrolled in or completed a 2-year college program
- ☐ Enrolled in or completed a 4-year college program
- ☐ Other _____

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5. When you compare yourself to your friends and others your age, how do you rate yourself on school ability? Would you say you are ... [Read choices and mark selected.]

- ☐ Below average
- ☐ Slightly below average
- ☐ Average
- ☐ Slightly above average
- ☐ Above average

6. How would you describe your average grades in high school? Would you say you received mostly... [Read choices and mark selected.]

- ☐ As
- ☐ As and Bs
- ☐ Bs
- ☐ Bs and Cs
- ☐ Cs
- ☐ Cs and Ds
- ☐ Ds
- ☐ _____ [Some other configuration described by interviewee]

7. How would you describe your living arrangement? Do you live with your parents or a guardian?

- ☐ No
- ☐ Yes

If YES, verify: So, you live with your mother and father? [Write any clarifications.]
Do you live with any brothers or sisters? [Write response.]

If NO, ask: Do you live alone? [Write any clarifications.] How long have you lived alone [or with roommates]? [Write response.] Did you live with your parents before you lived alone? [Write response.]

8. How far in school did your mother [stepmother, female guardian] go? [Prompt with choices, if needed.]

- ☐ She never attended high school.
- ☐ She attended high school but did not finish.
- ☐ She graduated from high school.
- ☐ She had some education after high school.
- ☐ She graduated from college.
- ☐ She had more than 4 years of college.
- ☐ I don't know.

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Interview Protocol: Delayed Entry Program

9. How far in school did your father [stepfather, male guardian] go? [Prompt with choices, if needed.]

- ☐ He never attended high school.
- ☐ He attended high school but did not finish.
- ☐ He graduated from high school.
- ☐ He had some education after high school.
- ☐ He graduated from college.
- ☐ He had more than 4 years of college.
- ☐ I don't know.

10. What is your mother's [stepmother's, female guardian's] job? [Write response, including homemaker, doesn't have one, I don't know, etc. If doesn't know, ask if he knows duties and/or company name. If more than one, ask which is primary.]

11. What is your father's [stepfather's, male guardian's] job? [Write response, including doesn't have one, I don't know, etc. If doesn't know, ask if he knows duties and/or company name. If more than one, ask which is primary.]

12A. Do you have a job right now?

- ☐ No ☐ Yes

12B. If YES, ask: What is your job? [Write name and then mark category, if possible. If more than one, ask which is primary.]

- ☐ Clerical or Administrative [e.g., secretary, bookkeeper, mail clerk, bank teller]
 - ☐ Construction, Mining, or Drilling [e.g., *skilled* construction worker, carpenter, roofer]
 - ☐ Craft or Precision Production [e.g., tool-and-die maker, cabinet maker, engraver]
 - ☐ Farming, Forestry, or Fishing [e.g., farm worker, gardener, logger, fisherman]
 - ☐ Laborer, Helper, Handler, or Equipment Cleaner [e.g., *unskilled* construction worker, dock worker, stock handler, car washer]
 - ☐ Machine Operator, Assembler, or Inspector [e.g., punch press, furniture assembler]
 - ☐ Mechanic or Repairer [e.g., auto mechanic, television repairer, locksmith]
 - ☐ Protective Services [e.g., security guard, police officer, firefighter]
 - ☐ Sales [e.g., sales clerk, real estate]
 - ☐ Service [e.g., waiter, cook, beautician, housekeeper, janitor, child care, hospital orderly]
 - ☐ Technician [e.g., computer programmer, dental hygienist, lab technician]
 - ☐ Transportation or Material Moving [e.g., truck or bus driver, barge crew, bulldozer operator]
-

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12C. If YES, ask: How many hours a week do you work? [Write number and any qualifiers.] _____

13. How would you describe yourself? Tell me things such as: What are your interests and hobbies? What are you friends like? What do you love to do and hate to do?
[Get as much detail as feasible related to personality/disposition. Sample probes: Do you think you're more outgoing or shy? Do you usually plan what you'll do or act on the spur of the moment? Do you enjoy doing things by yourself or do you like being with a group?]

14. When did you sign your enlistment contract? _____ [Record date.]

Determine 1 year prior date _____ [Record here and in spaces on #16, #17, #20, #25.]

15. What were you doing then? [Prompt if needed, e.g., high school senior?]

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PLANS ONE YEAR PRIOR TO ENLISTMENT

All right, please continue to imagine yourself back in _____ [give 1 year prior date from above]. Now think about what your plans were at that time.

17. If someone had asked you, "What do you think you might be doing after you get out of high school?" What would you have said? [Q438] [Probe: Anything else? Mark all options mentioned.]

- ☐ Going to school (i.e., any formal training/education)
- ☐ Working at a job
- ☐ Doing nothing
- ☐ Joining the (military service)
- ☐ Undecided
- ☐ Staying at home
- ☐ Other _____

18. Again, thinking back to that time and your plans, if someone had asked you, "How likely do you think it is that you will be serving in the military in the next few years?" What would you have said? [Q503] [Read choices. Mark the one selected. Clarify interviewee's response to ensure he understands the timeframe, e.g., for high propensity, "So, when you were a junior in high school, you already thought that you would enlist, right?"]

- ☐ Definitely
- ☐ Probably
- ☐ Probably not
- ☐ Definitely not

19. When would you say you first thought you would like to join the military? [Try to link to a date and record it or describe time.] _____

20. Keep imagining yourself one year before you signed your enlistment contract _____ [give 1 year prior date from above], and tell me how much you had thought about your future at that time? Did you have a good idea of what you were going to do? Had you looked at options? Did you plan most things or did you do things on the spur of the moment?

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Early Thinking about Education as an Option Prior to Enlistment

21A. One year before you signed your enlistment contract were you considering going to school after high school? [2- and 4-year colleges; vocational, technical, and business schools/colleges]

☐ No

☐ Yes

21B. If NO, ASK 21E and 21F using "school." Then GO TO 22A.

If YES, ask: What schools were you considering? [Prompt for names and majors.]

If more than one mentioned, ask the following and use response for # 30:

Which one did you think you would *most likely* be doing? _____

21C. So, at that time, what had you already done to learn about going to _____?
[Prompt for kind and amount of *early* thinking and activities done, e.g., from counselor, school activities, promotional materials, college visits. Distinction here is on substantially different considerations such as 2-year vs. 4-year, not one 4-year vs. another 4-year.]

21D. What were your expectations about going to _____? [Probe: What did you think you would be doing? What did you think your life would be like? What type of environment did you think you'd be in? How regulated did you think your life would be? What kind of people did you think you'd be around? Did you think you'd fit in? How challenging did you think the education option would be?]

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Interview Protocol: Delayed Entry Program

21E. What would you say were the positive features and negative features about going to _____? [Probe: What were you thinking about the conditions, the lifestyle, money considerations, your interest in the pursuing this goal, types of people, opportunities for the future?]

21F. While you are thinking about the positives and negatives of going to school, and given *what you knew then*, how attractive would you say going to _____ was to you? Would you say it was...? [Cross-reference with 22F, 23F, 24F.]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive ☐ no opinion

21G. On the whole, how good did you think your chances were in being accepted for school at _____? Would you say they were...?

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

If any of negative responses, ask what the problem was?

21H. On the whole, how good did you think your chances were of having enough financing to go to _____? Would you say they were...?

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

If any of negative responses, ask what the problem was?

21I. What did your parents, friends, and other important people in your life think about the school you were considering?

Parents _____

Friends _____

Others _____

Army Research Institute --Propensity to Enlist
Interview Protocol: Delayed Entry Program

Early Thinking about Jobs as an Option Prior to Enlistment

22A. One year before you signed your enlistment contract were you considering taking any jobs after high school?

☐ No

☐ Yes

22B. If NO, ASK 22E and 22F using "a job." Then GO TO 23A.

If YES, ask: What jobs were you considering? [Prompt for names.]

If more than one mentioned, ask the following and use response for # 30:

Which one did you think you would *most likely* be doing? _____

22C. So, at that time, what had you already done to learn about working at _____?
[Prompt for kind and amount of *early* thinking and activities he had done, e.g., from counselor, vocational courses, part time work.]

22D. What were your expectations about working at _____? [Probe: What did you think you would be doing? What did you think your life would be like? What type of environment did you think you'd be in? How regulated did you think your life would be? What kind of people did you think you'd be around? Did you think you'd fit in? How challenging did you think the job would be?]

Army Research Institute --Propensity to Enlist
Interview Protocol: Delayed Entry Program

22E. What would you say were the positive features and negative features of working at _____? [Probe: What were you thinking about the working conditions, the lifestyle, the pay and other benefits, your interest in the work, type of co-workers, opportunities for the future?]

22F. While you are thinking about the positives and negatives of working at a job, and given what you knew then, how attractive would you say working at _____ was to you? Would you say it was...? [Cross-reference with 21F, 23F, 24F.]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive ☐ no opinion

If rated same as 21F, education option, Say: You rated working at a job and going to school about the same. Were they about equal in your preference?

☐ No ☐ Yes

If NO, ask for and write qualifiers. _____

22G. On the whole, how good did you think your chances were in being accepted for a job as/at _____? Would you say they were...?

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

If any of negative responses, ask what the problem was?

22H. What did your parents, friends, and other important people in your life think about the job you were considering?

Parents _____

Friends _____

Others _____

Army Research Institute --Propensity to Enlist
Interview Protocol: Delayed Entry Program

Early Thinking about the Military as an Option Prior to Enlistment

23A. In the year before you actually enlisted were you *considering* enlisting in the military after high school?

☐ No

☐ Yes

23B. If NO, GO TO 23C and ask remaining questions using "military."

If YES, ask: Which branches were you considering?

If more than one mentioned, ask the following and use response for # 30:

Which one did you think you would *most likely* be entering? _____

23C. So, at that time, what had you already done to learn about enlisting in _____?

[Prompt for kind and amount of *early* thinking and activities he had done, e.g., from counselor, JROTC, counselor, relative, friend, recruiter.]

23D. What were your expectations about serving in _____? [Probe: What did you think you would be doing? What did you think your life would be like? What type of environment did you think you'd be in? How regulated did you think your life would be? What kind of people did you think you'd be around? Did you think you'd fit in? How challenging did you think the military would be?]

Army Research Institute --Propensity to Enlist
Interview Protocol: Delayed Entry Program

23E. What would you say were the positive features and negative features of the serving in _____? [Probe: What were you thinking about the working conditions, the lifestyle, the pay and other benefits, your interest in the work, type of co-workers, opportunities for the future?]

23F. While you are thinking about the positives and negatives of the military, and given what you knew then, how attractive would you say serving in _____ was to you? Would you say it was...? [Cross-reference with 21F, 22F, 24F.]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive ☐ no opinion

If rated same as 21F, education, or 22F, job options, Say: You rated serving in the military and [education/job] about the same. Were they about equal in your preference?

☐ No ☐ Yes

If NO, ask for and write qualifiers. _____

23G. On the whole, how good did you think your chances were in being accepted for service in _____? Would you say they were...?

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

If any of negative responses, ask what the problem was?

23H. What did your parents, friends, and other important people in your life think about the military service you were considering?

Parents _____

Friends _____

Others _____

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Early Thinking about Other Options Prior to Enlistment

24A. In the year before you enlisted were you considering any other options after high school?

☐ No

☐ Yes

24B. If NO, GO TO Interviewer Summary, page 15.

If YES, ask: What were you considering?

If more than one mentioned, ask the following and use response for # 30:

Which one did you think you would *most likely* be doing? _____

24C. So, at that time, what had you already done to learn about [this other option]?
[Prompt for kind and amount of *early* thinking and activities he had done.]

24D. What were your expectations about [this other option]? [Probe: What did you think you would be doing? What did you think your life would be like? What type of environment did you think you'd be in? How regulated did you think your life would be? What kind of people did you think you'd be around? Did you think you'd fit in? How challenging did you think [this option] would be?]

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24E. What would you say were the positive features and negative features of [the other option]? [Probe: What were you thinking about the working conditions, the lifestyle, the pay and other benefits, your interest in the work, type of co-workers, opportunities for the future?]

24F. While you are thinking about the positives and negatives of [the other option], and *given what you knew then*, how attractive would you say [that option] was to you? Would you say it was...? [Cross-reference with 21F, 22F, and 23F.]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive ☐ no opinion

If rated same as 21F, education, 22F, job, or 23F, military options, Say: You rated [the other option] and [education/job/military] about the same. Were they about equal in your preference?

☐ No ☐ Yes

If NO, ask for and write qualifiers. _____

24G. On the whole, how good did you think your chances were in being accepted for [the other option]? Would you say they were...?

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

If any of negative responses, ask what the problem was?

24H. What did your parents, friends, and other important people in your life think about the [other option] you were considering?

Parents _____

Friends _____

Others _____

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INTERVIEWER SUMMARY

Briefly recap your understanding of the key information interviewee has given about thinking and planning prior to the year of enlistment. Seek confirmation of information. For example:

Let me just make sure I understand what you've told me. One year before you signed your enlistment contract, you were finishing your junior year in high school. You were basically doing okay in school, liked math and computer science, played basketball, lived at home with your parents and a sister and brother where your primary language was English, and worked on a farm during the summers. In planning for your future, you were mostly thinking about going to community college or joining the Army. You thought these were pretty attractive options, and you felt your chances were pretty good for doing either one of them. Is that right?

Record any clarifying comments or corrections.

ACTIVITIES IN THE YEAR PRIOR TO ENLISTMENT

All right, you've talked about the early thinking and planning you did in the year before you signed your enlistment contract. Continue to think about yourself in that year, since _____ [give 1 year prior to enlistment date from above], and think about what you actually did -- the *activities* you were doing in that one year before you signed your enlistment contract.

Pursuing the Education Option [Use only if interviewee gave education as a consideration.]

25A. What specific things did you do to pursue your *education* goals? [Prompt with choices, if needed and mark selected.]

- ☐ Worked with school counselor
- ☐ Went to school career center/Used college software program
- ☐ Took SAT/ACT
- ☐ Got catalogs
- ☐ Visited schools
- ☐ Sent applications
- ☐ Other _____

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25B. From whom or where did you get education information? Could you tell me a little about what happened or what the person did?

25C. After you got this information and you did the activities and thought about *how much you would like* the educational option, what happened to your opinion of this option? Would you say it was ...? [Read choices and mark selected.]

☐ much more negative ☐ somewhat more negative ☐ the same ☐ somewhat more positive ☐ much more positive

If any response other than "the same," ask: What made you change your opinion?

25D. Again, after you got the information and did the activities and thought about the educational option, what happened to your view of *how likely you would be accepted* for this option? Would you say you thought it was ...? [Read choices and mark selected.]

☐ much less likely ☐ somewhat less likely ☐ the same ☐ somewhat more likely ☐ much more likely

If any response other than "the same," ask: What made you change your view?

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Pursuing the Job Option [Use only if interviewee gave jobs as a consideration.]

26A. What specific things did you do to pursue your *job* goals? [Prompt with choices, if needed and mark selected.]

- ☐ Worked with school counselor
- ☐ Worked with employment agency
- ☐ Talked to employers
- ☐ Answered newspaper ads
- ☐ Had job interviews
- ☐ Other _____

26B. From whom or where did you get job information? Could you tell me a little about what happened or what the person did?

26C. After you got this information and you did the activities and thought about *how much you would like* the job option, what happened to your opinion of this option? Would you say it was ...? [Read choices and mark selected.]

- | | | | | |
|---|---|--------------------------------|---|---|
| <input type="radio"/> much more
negative | <input type="radio"/> somewhat
more negative | <input type="radio"/> the same | <input type="radio"/> somewhat
more positive | <input type="radio"/> much more
positive |
|---|---|--------------------------------|---|---|

If any response other than "the same," ask: What made you change your opinion?

26D. Again, after you got the information and did the activities and thought about the job option, what happened to your view of *how likely you would be accepted* for this option? Would you say you thought it was ...? [Read choices and mark selected.]

- | | | | | |
|---|---|--------------------------------|---|---|
| <input type="radio"/> much less
likely | <input type="radio"/> somewhat
less likely | <input type="radio"/> the same | <input type="radio"/> somewhat
more likely | <input type="radio"/> much more
likely |
|---|---|--------------------------------|---|---|

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If any response other than "the same," ask: What made you change your view?

Pursuing the Other Option [Use only if interviewee gave another option as a consideration.]

27A. What specific things did you do to pursue your *other* goal, [state other option]?

27B. From whom or where did you get information about [the other option]? Could you tell me a little about what happened or what the person did?

27C. After you got this information and you did the activities and thought about *how much you would like* [this other option], what happened to your opinion of this option? Would you say it was ...? [Read choices and mark selected.]

☐ much more negative ☐ somewhat more negative ☐ the same ☐ somewhat more positive ☐ much more positive

If any response other than "the same," ask: What made you change your opinion?

27D. Again, after you got the information and did the activities and thought about [the other option], what happened to your view of *how likely you would be accepted* for this option? Would you say you thought it was ...? [Read choices and mark selected.]

☐ much less likely ☐ somewhat less likely ☐ the same ☐ somewhat more likely ☐ much more likely

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If any response other than "the same," ask: What made you change your view?

Pursuing the Military Option

28A. What specific things did you do to pursue your *military* goals? [Prompt with choices, if needed and mark selected.]

- ☐ Worked with school counselor
- ☐ Returned postcard
- ☐ Called 800 number
- ☐ Went to see recruiter
- ☐ Took ASVAB
- ☐ Other _____

28B. From whom or where did you get military information? Could you tell me a little about what happened or what the person did?

28C. After you got this information and you did the activities and thought about *how much you would like* the military option, what happened to your opinion of this option? Would you say it was ...? [Read choices and mark selected.]

- | | | | | |
|---|---|--------------------------------|---|---|
| <input type="radio"/> much more
negative | <input type="radio"/> somewhat
more negative | <input type="radio"/> the same | <input type="radio"/> somewhat
more positive | <input type="radio"/> much more
positive |
|---|---|--------------------------------|---|---|

If any response other than "the same," ask: What made you change your opinion?

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29D. Again, after you got the information and did the activities and thought about the military option, what happened to your view of *how likely you would be accepted* for this option? Would you say you thought it was ...? [Read choices and mark selected.]

- ☐ much less likely ☐ somewhat less likely ☐ the same ☐ somewhat more likely ☐ much more likely

If any response other than “the same,” ask: What made you change your view?

29A. When did you finally decide to enlist? _____

29B. Please give me as many details as you can about how you finally decided to enlist. What happened? What caught your attention? What factors most influenced your choice? [Try to determine any external factors, such as ads or presentations, that influenced the decision.]

This image shows a single sheet of white paper with horizontal blue or grey ruling lines. The lines are evenly spaced and run across the width of the page. There is no handwriting or other markings on the paper.

Army Research Institute --Propensity to Enlist

Interview Protocol: Delayed Entry Program

CURRENT OPINIONS ABOUT ENLISTMENT

It's a lot of work to think back about your life and how you made your decision to enlist in the military. I want to thank you for making such a good effort. So, relax. Now, we're back in the present, and I'd like to finish with the opinions you have today about your choices and your decision.

30. Now, today, when you think about the positives and negatives of the options you were considering before, how attractive would you say each choice you were considering is to you? Would you say it was...? [Complete only for options interviewee used. Mark rating for each.]

☐ Education Your top preference was _____ [from 21B]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive

☐ Job Your top preference was _____ [from 22B]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive

☐ Military Your top preference was _____ [from 23B]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive

☐ Other Your top preference was _____ [from 24B]

☐ very attractive ☐ attractive ☐ neutral ☐ unattractive ☐ very unattractive

31. On the whole, now, today, how good do you think your chances would be in obtaining one of the other choices you were considering? Would you say they were...? [Complete only for options interviewee used. Mark rating for each.]

☐ Education

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

☐ Job

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

☐ Other

☐ almost certain ☐ likely ☐ even odds ☐ unlikely ☐ almost certainly not ☐ no opinion

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32. Now what are your expectations about serving in the military? How have your views changed? [the working conditions, the lifestyle, the pay and other benefits, interest in the work, type of co-workers, opportunities for the future]

33. Now when you think about it, what do you see as the positive features and negative features of serving in the military? [the working conditions, the lifestyle, the pay and other benefits, interest in the work, type of co-workers, opportunities for the future]

34. If you were telling a friend why you enlisted in the military, what would you say is the single most important thing that made you decide to do it?

32. Would you recommend enlisting in the military to others?

☐ No ☐ Yes

Comment

33. Is there anything else you think is important to tell me about why you decided to enlist in the military and how you carried out that decision?

☐ No ☐ Yes

Thanks very much for your time.

APPENDIX B
FOCUS GROUP PROTOCOL

Youth Decisions and Propensity Focus Group Discussion Guide

[5 min.]

I. INTRODUCTION AND INSTRUCTIONS

Hello, my name is _____ and I work for Westat, a research company located in Rockville. We've been asked to conduct a focus group with you; I don't know if any of you have participated in a focus group before, so let me explain what a focus group is. A focus group is simply a group of people gathered together to discuss a particular topic. In this case, we will be asking you to talk about your future plans. The Army Research Institute is interested in learning how young people like yourselves decide what they want to do after they get out of high school.

During this focus group, my job is to present you with certain topics and to keep you focused on them. If we get too far off track, I have to try and get us back on track.

YOUR TASK is the really important one. We are depending on your input to help us understand how you're making decisions about your future.

We're taping the discussions so that we don't miss anything. Also, behind me is a one-way mirror. Behind it are observers from the Army Research Institute and from HumRRO, another local research company. They're here because they want to see first hand what you have to share with us.

We will be doing 8 focus group sessions with young people like yourself. Afterwards, a summary of what was said will be written. Know that you will never be mentioned by name in any of the summaries or reports.

GROUND RULES:

There are a few ground rules that I'd like to cover before we begin.

- 1) This meeting is scheduled to last about 1 1/2 hours.
- 2) I have not scheduled a break, but if you feel the need to step out, please feel free to do so. I only ask that you return QUICKLY because your comments are important to us. The restrooms are located XXX.
- 3) Please don't be shy about sharing your opinions. Everyone doesn't have to answer every single question, but I do need to hear from all of you during the course of the session.
- 4) In this discussion, there are no wrong ideas or opinions. All of your comments and opinions are valued. If there is disagreement among you -- fine; Please do not hold back if your opinion differs from that of others. We really need to know if you all agree or disagree on the issues we cover today.
- 5) So that we get the most out of this, and because we are taping, please speak LOUDLY, CLEARLY, and ONE AT A TIME. Please direct your comments to the entire group and not just to the person sitting next to you.

[10 min.]

II. WARM-UP

SCHOOL/WORK. So I can get a sense of your background, I'd like to go around the room and have you tell me a little bit about where you are as far as school and work are concerned.

[20 min.]

III. PLANS FOR THE FUTURE

A. FORECAST. So you've told me a little bit about what you're doing, now I'd like to know where you think you're going. If you had to guess what you'll be doing two years from now (that would be October 1998) what would you say you'd be doing?

PROBE FOR:

- going to school? working?
- where will you be living? at home? own place? different state? dorms?

B. IS THIS THE PREFERABLE FORECAST. Now, you just told me what you think you might be doing in two years -- is there something else you'd rather do? *Only ask if youth actually had definite forecast -- for those who don't, can tailor this to:* Some of you don't have a guess about where you'll be in 2 years -- do you have any ideas about what you'd like to do, or are you still trying to figure that out?

C. PERCEIVED REASON FOR WANTING PLAN. So, why do you want to do that in 2 years? What'll you get out of doing that?

D. OBSTACLES. Could anything happen that would get in the way of these plans?

PROBE FOR:

- not getting into college? not finding the \$ to go to college? having a baby? getting married? bad grades? getting in trouble w/ law?

E. STEPS. What do you have to do to be able to get where you want to be in 2 years?

PROBE FOR:

- get a scholarship? get an apprenticeship/internship? get job experience? talk to counselor? get financial backing? apply for a job? take SAT? get good grades? do well in sports? apply to college? get recommendations?

ALSO PROBE FOR:

- so what steps do you have to take to be able to INSERT ACTION FROM ABOVE ? *if appropriate*

ALSO ASK:

- would you say that you like a lot of information before you decide, or does too much information bog you down?
- do you like it when people help you out when you need to make decisions about your life, or would you rather make the decisions on your own?

[15 min.]

IV. THE FAMILY

A. INFLUENCE. Now you've told me a little bit about what you may be doing in a couple of years, now I'd like to ask if your family has any say in what you'll be doing -- does your family influence your plans at all? How so?

PROBE FOR:

- who do you think of when I say "family"?
- do your parents/family give you a lot of advice or only once in a while?
- what do you think of their advice, usually? do you follow it?

B. ASPIRATIONS. What do you think your family would like you to do? Why? How does that make you feel?

C. SUPPORT. What can your family do to support you while you try to decide about your future? Are there other ways a family *could* support their kids? Are there types of support that your family isn't able to give you right now?

D. ATTACHMENT. Do you think you'll always live near you family, or do you think you'll move away someday? Why is that? *for movers* How do you think you'll feel when you move?

PROBE FOR:

- free to try new things? homesick? afraid? happier about yourself? more responsible?

[20 min.]

V. CAREER IMAGES

INTRO. We've talked a lot about what your family's might want you to do, and we've talked about the types of plans you have. Now I'd like to talk very generally about the type of person who might have a certain plan.

A. COLLEGE. What sort of person goes to college?

PROBE FOR:

- why did this person decide to go to college out of high school?
- what does this person do on an average day?
- what are the positives and negatives of going to college out of high school?
- what's important to this person?
- what was his high school experience like?
- is there a difference between people who go to 2-year and 4-year colleges?
- do you know people who went to college after high school?
- what will these people do after college?
- how are these people different or similar to you?

B. WORKER. What sort of person goes to work out of high school?

PROBE FOR:

- why did this person decide to work out of high school?
- what sort of job are you thinking about? hourly? salaried?
- what does this person do on an average day?
- what are the positives and negatives of going to work out of high school?
- what's important to this person?
- what was his High School experience like?
- do you know people who went to work after high school?
- will these people stay in that job?
- how are these people different or similar to you?

C. SOLDIER. What sort of person joins the military?

PROBE FOR:

- why did this person join the military?
- what sorts of jobs do these people have? any others?
- what does this person do on an average day?
- are you thinking about enlisted members or officers? is there a difference?
- are there differences across Army, Navy, Air Force & Marines, or are they the same types of people?
- what are the positives and negatives of joining the military out of high school?
 - danger?
- what's important to this person?
- what was his high school experience like?
- do you know people who joined the military after high school?
- how long does this person stay in the military?
- how are these people different or similar to you?

D. COMPARE & CONTRAST. So, we've talked about people who have three types of plans coming out of high school: going to college, going to work, and joining the military. How are these three groups different? How are they alike? Is one more rewarding than the others? Is one of these easier to do than the others?

[15 min.]

VI. ENLISTMENT

A. ACTIONS. Have you ever considered enlisting in the military?

IF NO, PROBE FOR:

- why not? do you think you'd change your mind?

IF YES, PROBE FOR:

- what happened? did you talk to anybody about it? what did they say?

what effect did that conversation have on you? do you trust their opinion?

have you ever sent away for information? did advertisements have any effect on you?

did you talk to any military recruiters? what was that like? did they sway you either way?

B. PERCEIVED OPPORTUNITY. Do you think opportunities in the military are increasing, decreasing, or staying the same? Does this have any effect on whether you want to join the military? How are opportunities in the military compared with those in the working world? Do you think you'd be accepted by the military if you tried to enlist?

[15 min.]

VII. JOB ATTRIBUTES

INTRO. We've talked a little about the military. Let's go back to thinking about jobs in general, and about your job plans, in particular. I'd like you to think about what you'd like to have in a job. Maybe you're interested in things like good pay, health insurance, job security. I'm going to hand out packets of cards. These cards have various job features written on them. I'd like you to read through these cards.

A. IDEAL JOB. Then I'd like you to put them in order of importance for you, in whatever job that would be your ideal job. Put the one that's most important on the top of your pile, the second one next, and so forth. Then I'm going to ask for everyone's card order and we're going to talk about it. Does that make sense? What do you have listed as the most important feature of your ideal job? Second? *Encourage discussion.* What do you have last? *Encourage discussion.* Are there other job features that we're missing here that are important?

B. MILITARY OFFER. OK, now I'd like you to rank the cards again. This time, though, I want you to think about what the military actually offers to people who enlist. So the top card this time should be what the military does a good job of offering, and the last card will be what they offer least well. Any questions? *Same exercise as before, asking for first, second and last cards.* Are there other job features that we're missing here that the military offers?

[5 min.]

VIII. ENLISTMENT

WRAP-UP. Now, there are differences between what you all want in a job, and what you think the military offers in a job. What do you think the military can do to make it more attractive to young men like yourselves?

Any other things you want to let me know, or any questions you have for me?

Well, thank you very much for spending your time with me this evening. *Describe procedures for getting paid.*
Thanks again for all your help.

**Youth Decisions and Parental Influence
Focus Group Guide - Parent Groups**

[5 min.]

I. INTRODUCTION AND INSTRUCTIONS

Hello, my name is _____ and I work for Westat, a research company located in Rockville. We've been asked by the Army Research Institute to conduct a focus group with you; I don't know if any of you have participated in a focus group before, so let me explain what a focus group is. A focus group is simply a group of people gathered together to discuss a particular topic. In this case, we will be asking you to talk about the career plans of young people these days. Specifically, the plans your son might be making right now, and how you, as a parent, might have an impact on his decisions.

During this focus group, my job is to present you with certain topics and to keep you focused on them. If we get too far off track, I have to try and get us back on track. I also have the job of time keeper. We only have 1 1/2 to 2 hours, and we have a lot of topics to get through today. This means I may have to cut people off. This doesn't mean that what you're saying isn't important, it's just that I have so many topics to cover, we may not get to talk about things as long as we might like.

YOUR TASK is the really important one. We are depending on your input to help us understand how your son might be making decisions about his future, and what sort of part you play in this process.

We're taping the discussions so that we don't miss anything. Also, behind me is a one-way mirror. Behind it are observers from the Army Research Institute and from HumRRO, another local research company. They're here because they want to see first hand what you have to share with us.

We will be doing 4 focus group sessions with parents like yourself. Afterwards, a summary of what was said will be written. Know that you will never be mentioned by name in any of the summaries or reports.

GROUND RULES:

There are a few ground rules that I'd like to cover before we begin.

- 1) This meeting is scheduled to last about 1 1/2 hours.
- 2) I have not scheduled a break, but if you feel the need to step out, please feel free to do so. I only ask that you return **QUICKLY** because your comments are important to us. The restrooms are located XXX.
- 3) Please don't be shy about sharing your opinions. Everyone doesn't have to answer every single question, but I do need to hear from all of you during the course of the session.
- 4) In this discussion, there are no wrong ideas or opinions. All of your comments and opinions are valued. If there is disagreement among you -- fine; Please do not hold back if your opinion differs from that of others. We really need to know if you all agree or disagree on the issues we cover today.
- 5) So that we get the most out of this, and because we are taping, please speak **LOUDLY, CLEARLY**, and **ONE AT A TIME**. Please direct your comments to the entire group and not just to the person sitting next to you.

[10 min.]

II. WARM-UP

SCHOOL/WORK. So I can get a sense of your background, I'd like to go around the room and have you tell me a little bit about your son, and what he's doing right now. What grade is he in? Does he have a job after school? What are his interests? That sort of thing.

[15 min.]

III. SONS PLANS FOR THE FUTURE

A. FORECAST.

So you've told me a little bit about what you're sons are doing, now I'd like to know what you think they might do after high school. [Now, I realize that some of your sons may be Seniors in high school, but others have sons who are younger -- just give me your best guess as to what you think your son might be doing the year after he leaves high school, and please remind me what grade he's in right now.]

PROBE FOR:

- going to school? working?
- where will he be living? at home? own place? different state? dorms?
- How long do you think he'll be doing this?

MAY WANT TO BRING ATTACHMENT IN HERE

B. IS THIS THE PREFERABLE FORECAST FOR SON?.

Now, you just told me what you think your son might be doing after high school -- is there something else you think he'd rather do? *Only ask if youth actually had definite forecast -- for those who don't, can tailor this to:* Some of you don't have a guess about what your son will be doing after high school -- do you have any ideas about what he'd like to do, or is he still trying to figure that out?

C. OBSTACLES. *may have come up already*

Can you think of anything that might get in the way of his plans?

PROBE FOR:

- not getting into college? not finding the \$ to go to college? having a baby? getting married?
- bad grades? getting in trouble w/ law?

D. STEPS.

What has he done to get where he wants to be after high school? Does he know what he has to do?

PROBE FOR:

- get a scholarship? get an apprenticeship/internship? get job experience? talk to counselor?
- get financial backing? apply for a job? take SAT? get good grades? do well in sports?
- apply to college? get recommendations?

Now, did he do these things on his own, or did you help him? *how much help?*

[15 min.]

IV. PARENTS INFLUENCE

A. ASPIRATIONS. *may have come up at youth preference section*

Now you've told me a little bit about what your SON may want to do after high school, I'd like to know how these plans fit in with what YOU might want for your son? Same or different? Why is this preferable to son's plan? Have you talked to your son much about this? What effect does this have on him?

B. INFLUENCE.

Do you give your son advice often or only once in a while? *what is "often"* Do you think he follows this advice? Why do you think that?

C. SUPPORT.

What can you do as a parent to support your son while he tries to make decisions about his future? Are there other ways a family *could* support their kids? *generate a list*

D. ATTACHMENT. *may have already addressed in future plans*

Do you think your son will always live near you, or do you think he'll move away someday? Why is that?

PROBE FOR:

- free to try new things? homesick? afraid? happier about himself? more responsible? finances?

[20 min.]

V. CAREER IMAGES

INTRO. We've talked a lot about the sorts of plans your sons might have now and what they might be doing in the near future. Now I'd like to talk very generally about career paths, and the type of young person who might have a certain plan.

A. COLLEGE.

What sort of person goes to college?

PROBE FOR:

- why did this person decide to go to college out of high school?
- what does this person do on an average day?
- what are the positives and negatives of going to college out of high school?
- what's important to this person?
- what was his high school experience like?
- is there a difference between people who go to 2-year and 4-year colleges?
- what will these people do after college?
- how are these people different or similar to your son?

B. WORKER.

What sort of person goes to work out of high school?

PROBE FOR:

- why did this person decide to work out of high school?
- what sort of job are you thinking about? hourly? salaried?
- what does this person do on an average day?
- what are the positives and negatives of going to work out of high school?
- what's important to this person?
- what was his High School experience like?
- will these people stay in that job?
- how are these people different or similar to your son?

C. SOLDIER.

What sort of person joins the military?

PROBE FOR:

- why did this person join the military?
- what sorts of jobs do these people have? any others?
- what does this person do on an average day?
- are you thinking about enlisted members or officers? is there a difference?
- are there differences across Army, Navy, Air Force & Marines, or are they the same types of people?
- what are the positives and negatives of joining the military out of high school?
 - danger? what if he wanted to be a police officer?
- what's important to this person?
- what was his high school experience like?
- how long does this person stay in the military?
- how are these people different or similar to your son?

D. COMPARE & CONTRAST.

So, we've talked about young people who have three types of plans coming out of high school: going to college, going to work, and joining the military. How are these three groups different? How are they alike? Is one more rewarding than the others? Is one of these easier to do than the others?

[15 min.]

VI. ENLISTMENT

A. ACTIONS. As far as you know, has your son ever considered enlisting in the military?

IF YES, PROBE FOR:

- what happened? did he talk to you about it? what did you say to him? did he listen?
- do you think advertisements have any effect on young people?
- what do you think about military recruiters?

IF NO, PROBE FOR:

- why not? do you think he'd change his mind?

Do you think your son would be accepted by the military if he tried to enlist?

B. PERCEIVED OPPORTUNITY. Do you think opportunities in the military are currently increasing, decreasing, or staying the same as in the past? Does this have any effect on whether you would want your son to join the military? How are opportunities in the military compared with those in the working world?

[15 min.]

VII. JOB ATTRIBUTES

INTRO. We've talked a little about the military. Let's go back to thinking about jobs in general, and about your son's possible future job, in particular. I'd like you to think about what you'd like him to have in a job. Maybe you think he should be interested in things like good pay, health insurance, job security. I'm going to hand out packets of cards. These cards have various job features written on them. I'd like you to read through these cards.

A. IDEAL JOB. Then I'd like you to put them in order of importance, in whatever job you would want for your son; the ideal job for him. Put the one that's most important on the top of your pile, the second one next, and so forth. Then I'm going to ask for everyone's card order and we're going to talk about it. Does that make sense? What do you have listed as the most important feature of your ideal job? Second? *Encourage discussion.* What do you have last? *Encourage discussion.* Are there other job features that we're missing here that are important?

B. MILITARY OFFER. OK, now I'd like you to rank the cards again. This time, though, I want you to think about what the military actually offers to young people who enlist. So the top card this time should be what the military does a good job of offering, and the last card will be what they offer least well. Any questions? *Same exercise as before, asking for first, second and last cards.* Are there other job features that we're missing here that the military might offer to young people?

[5 min.]

VIII. ENLISTMENT

WRAP-UP. Now, there are differences between what you all want in a job for your son, and what you think the military offers in a job. What do you think the military can do to make it a more attractive option to young men like your sons?

Any other things you want to let me know, or any questions you have for me?

Well, thank you very much for spending your time with me this evening. *Describe procedures for getting paid.*
Thanks again for all your help.

JOB ATTRIBUTE CARDS

Good Pay	Job security
Work that's challenging	Good benefits (ex: health insurance)
Liking the people you work with	A job that will look good on your résumé and help you get your next job
Freedom to decide how you complete your work	Opportunity for advancement at the company
Working at a company that likes employees to give their own ideas	Where the company is located

Learning new skills

**A job that allows you more time
for your personal life and family**

Good Pay	Job security
Work that's challenging	Good benefits (ex: health insurance)
Liking the people you work with	A job that will look good on your résumé and help you get your next job
Freedom to decide how you complete your work	Opportunity for advancement at the company
Working at a company that likes employees to give their own ideas	Where the company is located

Learning new skills

**A job that allows you more time
for your personal life and family**

APPENDIX C
MASTER SURVEY

**Just Say Yes Survey:
Master Version**

(OVERHEAD: This is YATS, will need to be modified to fit this project and add the screen--males, 16-21 years old only)

Hello, my name is _____. I am calling from Westat, a private research organization in Rockville, Maryland.

We are conducting this study to find out about the opinions and career plans of young adults. The study is being conducted for the Department of Defense and is authorized in 10 U.S. Code 2358, Research Projects. Study results will be used.... Any information you provide is protected under the Privacy Act of 1974. Your identity will not be released for any reason. You may ask us to skip any questions with which you are not comfortable, and you can stop the discussion at any time.

You are entitled to a printed copy of the Privacy Act Statement that applies to this survey. (Would you like a copy of the statement?) [If Yes, Get Address And Provide Respondent Copy Of Privacy Act Statement.]

This survey is estimated to take approximately than 30 minutes of your time. This may vary as some interviews will take more time and some will take less time. You may send comments regarding this estimate or any other aspect of this collection of information, including suggestions for reducing the length, to the Federal Government. Would you like the addresses of the Government offices you may contact?

**** INSERT transition from overhead to survey.**

**PROPENSITY and AVAILABILITY
(Common Items)**

Unaided Propensity

7. Now, let's talk about your plans (after you get out of high school/for the next few years). What do you think you might be doing? (mark all that apply)

- a. school
- b. work
- c. military
- d. other

Availability

8. Please tell me if you have taken or plan to take the following tests:

PSAT	a. yes	b. plan to take	c. no
SAT	a. yes	b. plan to take	c. no
ACT	a. yes	b. plan to take	c. no
ASVAB	a. yes	b. plan to take	c. no

8a. and, if yes, what was your score?

PSAT	math _____	verbal _____	total _____
SAT	math _____	verbal _____	total _____
ACT	math _____	verbal _____	total _____
ASVAB	AFQT _____		
Other	specify _____	score _____	

Current school/Job

9. Are you enrolled in school or a training program now?

- a. yes
- b. no

9a. Will you be enrolled in school or a training program next September?

- a. yes
- b. no

10. How likely is it that you will continue your education past high school?

- a. definitely
- b. probably
- c. probably not
- d. definitely not

11. If you do not plan to continue your education, why not?

- a. dislike school
- b. not interested
- c. lack of funds
- d. prefer to work
- e. other

12. Are you currently employed?

- a. yes, full time
- b. yes, part time
- c. no

12a. Will you be working next September?

- a. yes, full-time
- b. yes, part-time
- c. no

13. If you are not currently employed, are you actively looking for work now?

- a. yes
- b. no

14. How easy or difficult is it for someone your age to get a full-time job in your community?

- a. very easy
- b. somewhat easy
- c. neither easy nor difficult
- d. somewhat difficult
- e. very difficult

Service Propensity--Overall and Individual Services

15. Before we talked today, had you ever considered the possibility of joining the military?

- a. yes
- b. no

16. If you were to consider joining the military, what would be the main reasons? (mark all that apply)

- a. Pay/Money
- b. Travel
- c. National Defense
- d. Retirement Benefits
- e. Develop work skills/experience/free job training
- f. Self esteem/pride
- g. To meet others
- h. Duty towards country
- i. Pay for future education
- j. Physically challenging assignment
- k. Not ready for college
- l. To develop discipline
- m. To gain structure in my life
- n. To get away from home/area
- o. Job security
- p. Family members are in military/tradition
- q. Have no better alternatives
- r. To get a job
- s. Other, specify _____

17. Now, I'd like to ask you how likely it is that you will be serving in the military in the next few years.

- a. definitely
- b. probably
- c. probably not
- d. definitely not

18. How likely is it that you will be serving in the...?

18a. Army

- a. definitely
- b. probably
- c. probably not
- d. definitely not

18b. Navy

- a. definitely
- b. probably
- c. probably not
- d. definitely not

18c. Coast Guard

- a. definitely
- b. probably
- c. probably not
- d. definitely not

18. How likely is it that you will be serving in the...? (CONT'D)

18d. Air Force

- a. definitely
- b. probably
- c. probably not
- d. definitely not

18e. Marine Corps

- a. definitely
- b. probably
- c. probably not
- d. definitely not

Other

85. If you decided to enlist in the military, do you think you would be qualified to serve?

- a. yes
- b. no

21. We've talked about several things you might be doing in the next few years. Taking everything into consideration, what are you most likely to be doing (after you finish high school/in the next few years)?

- a. school
- b. work
- c. military
- d. other

**** INSERT transition to Telephone Test**

**TELEPHONE TEST
(Common Items)**

Approximately 10 item telephone test of cognitive ability.

**** INSERT transition to variable portions of the survey**

**A. APTITUDE: SELF-ASSESSMENT
(Variable Component)**

22. Which of the following best describes your average grades (so far) in high school?

- a. A (93 - 100)
- b. A- (90 - 92)
- c. B+ (87 - 89)
- d. B (83 - 86)
- e. B- (80 - 82)
- f. C+ (77 - 79)
- g. C (73 - 76)
- h. C- (70 - 72)
- i. D (69 or below)

23. (Is/Was) your high school program...

- a. Academic or college preparatory
- b. Commercial or business training
- c. Vocational or technical?

24. What is the highest level mathematics course you plan to take or took in high school? (field code)

- a. consumer or business math
- b. geometry
- c. algebra I
- d. algebra II
- e. trigonometry
- f. calculus
- g. other, specify _____

24a. Did you take any advanced placement courses in math?

- a. yes, specify _____
- b. no

25 What is the highest level science course you plan to take or took in high school? [field code]

- a. basic science
- b. biology
- c. chemistry
- d. physics
- e. biology II
- f. chemistry II
- g. physics II
- h. other, specify _____

25a. Did you take any advanced placement courses in science?

- a. yes, specify _____
- b. no

A. PERSONALITY/TEMPERAMENT
(Variable Component)

Conscientiousness

strongly agree agree neither nor disagree strongly disagree

47. I like to keep my belongings neat and organized.

48. If I start something, I work until I finish it to my satisfaction.

49. I always try to do more than is expected of me.

Conscientiousness (CONT'D)

- | | strongly
agree | agree | neither
nor | disagree | strongly
disagree |
|---|-------------------|-------|----------------|----------|----------------------|
| 50. I try to be fully prepared before I undertake any task. | | | | | |
| 51. I try to set a schedule for accomplishing tasks, and stick to it. | | | | | |

Agreeableness

- | | strongly
agree | agree | neither
nor | disagree | strongly
disagree |
|---|-------------------|-------|----------------|----------|----------------------|
| 53. I am always considerate of the feelings of others. | | | | | |
| 54. I try to be kind to everyone I know. | | | | | |
| 55. I like to help others, even if there is nothing in it for me. | | | | | |
| 56. I am considered by others to be a very friendly person. | | | | | |
| 57. I have a lot of sympathy for others who are having problems. | | | | | |

Extroversion

- | | strongly
agree | agree | neither
nor | disagree | strongly
disagree |
|---|-------------------|-------|----------------|----------|----------------------|
| 59. I am a very shy person. | | | | | |
| 60. At social functions, I talk to as many people as possible. | | | | | |
| 61. Most of my friends would describe me as a "talker." | | | | | |
| 62. My friends consider me to be bashful. | | | | | |
| 63. If things get too boring at a party, I try to get things going. | | | | | |

B. MILITARY KNOWLEDGE (Variable Component)

Knowledge

33. What percentage of people in the Army are in the infantry? _____%
34. What percentage of people in the Air Force are pilots? _____%
35. What percentage of people in the Navy are assigned to shore-based jobs at any one time, meaning not on a ship or submarine? _____%

36. What percentage of Army jobs are in electronics? _____%

37. What percentage of Army jobs are clerical or administrative? _____%

38. What percentage of people entering the Army have at least a high school diploma? _____%

B. ATTITUDE TOWARD MILITARY
(Variable Component)

strongly agree agree neither nor disagree strongly disagree

46. I think life on a military base is safe.

39. In the military there is too much focus on strict discipline/following orders.

40. Military training and work experience would be useful for a later civilian career.

41. I think military life is too dangerous.

42. Military pay and benefits are at least good as a civilian entry-level job.

43. The way people in the military have to move so often bothers me.

44. I like the job security the military offers.

45. Having to enlist for many years bothers me.

C. CAREER PREFERENCE
(Variable Component)

65. In the following pairs of jobs, which job do you prefer?

1. A. Carpenter (R)
 B. Detective (I)

2. A. Writer (A)
 B. Typist (C)

3. A. Bank teller (C)
 B. Photographer (A)

4. A. Laboratory Technician (I)
 B. Auto Mechanic (R)

5. A. Scientist (I)
 B. Police Officer (R)

65. In the following pairs of jobs, which job do you prefer? (CONT'D)

- 6. A. Actor (A)
 B. Accountant (C)
- 7. A. Teacher (S)
 B. Sales Representative (E)
- 8. A. Social Worker (S)
 B. Real Estate Agent (E)
- 9. A. Guidance Counselor (S)
 B. Travel Agent (E)

C. WORK VALUES
(Variable Component)

**** INSERT transition to these questions** (e.g., I now have a list of job attributes. I am going to present you with two of these attributes at a time and ask you which one you prefer.)

**** NOTE: item 66 will be asked in a "tournament fashion" and limited to 9 paired comparisons.**

66. In choosing between jobs, is it more important that the job provide you...

- 1. a. a feeling of accomplishment.
 or
 b. a steady income.
- 2. a. a feeling of accomplishment.
 or
 c. opportunity for advancement.
- 3. a. a feeling of accomplishment.
 or
 d. a chance to help others.
- 4. a. a feeling of accomplishment.
 or
 e. fair treatment by your employer.
- 5. a. a feeling of accomplishment.
 or
 f. the ability to plan your work with little supervision.
- 6. b. a steady income.
 or
 c. opportunity for advancement.
- 7. b. a steady income.
 or
 d. a chance to help others.

66. Which of the following job attributes do you prefer? (CONT'D)

8. b. a steady income.
or
e. fair treatment by your employer.
9. b. a steady income.
or
f. the ability to plan your work with little supervision.
10. c. opportunity for advancement.
or
d. a chance to help others.
11. c. opportunity for advancement.
or
e. fair treatment by your employer.
12. c. opportunity for advancement.
or
f. the ability to plan your work with little supervision.
13. d. a chance to help others.
or
e. fair treatment by your employer.
14. d. a chance to help others.
or
f. the ability to plan your work with little supervision.
15. e. fair treatment by your employer.
or
f. the ability to plan your work with little supervision.

D. DECISION MAKING PROCESS
(Variable Component)

strongly agree agree neither disagree strongly
agree nor disagree

1. I have given a great deal of thought about what I will be doing a few years from now.
2. I do **not** feel prepared to make decisions about my future.
3. Several careers are of equal interest, and I'm having a difficult time deciding.
4. None of the careers I know about appeals to me.
5. I know what kind of career I want to pursue.

strongly agree agree neither disagree strongly
agree nor disagree

6. I have a good idea of my abilities and skills.

D. APTITUDE: SUPPORT AND ACTIVITIES
(Variable Component)

26. Does your family get a newspaper and/or magazines regularly?

- a. yes
- b. no

27. Do you have a library card?

- a. yes
- b. no

28. During high school, what sports, clubs, and school groups did you participate in? (mark all that apply)

- a. team sport (e.g., baseball, basketball, football, soccer, hockey)
- b. individual sport (e.g., cross-country, gymnastics, golf, tennis, track, wrestling)
- c. cheerleading, drill team
- d. band, orchestra, chorus, choir, or other musical group
- e. student government
- f. national honor society, other academic honor society
- g. school yearbook, newspaper, literary magazine
- h. academic clubs (e.g., art, computer, foreign languages, math, science, debate)
- i. service clubs (e.g., key/keyete club)
- j. hobby clubs (e.g., photography, chess)
- k. vocational clubs (e.g., future teachers of America, future farmers of America)

29. Did you receive any special recognition, awards, honors from your school or community?

- a. yes
- b. no

29a. If yes, what type?

- a. academic, specify _____
- b. athletic, specify _____
- c. community service, specify _____
- d. other, specify _____

30. How many hours a day do you usually watch T.V. or video tapes?

- a. none
- b. 1 hour or less
- c. 2 hours
- d. 3 hours
- e. 4 hours
- f. 5 hours or more

31. How often do you discuss things you have studied in school with someone at home?

- a. almost everyday
- b. once or twice a week
- c. once or twice a month
- d. never or hardly ever

32. Is there a computer in your home? _____ yes _____ no

32a. If yes, how often do you use it for schoolwork?

- a. almost everyday
- b. once or twice a week
- c. once or twice a month
- d. never or hardly ever

**** INSERT transition back to common questions starting with Physical Fitness (e.g., I now have a few questions pertaining to physical fitness and health issues.)**

**PHYSICAL FITNESS
(Common Items)**

80. How many days per week do you...

0 thru 7

- a. Eat breakfast
- b. Eat at least some green vegetable
- c. Eat at least some fruit
- d. Exercise vigorously (jogging, swimming, calisthenics, or any other active sport)
- e. Get at least seven hours of sleep
- f. Get less sleep than you think you should

81. Do you have any recurring medical problems?

- a. yes
- b. no

82. Do you think you have any physical problems which would make you ineligible for military service?

- a. yes
- b. no

NEW. Overall, how would you rate your level of physical fitness?

- a. very fit
- b. fit
- c. neither fit nor unfit
- d. unfit
- e. very unfit

NEW. Do you think you could successfully complete the military's basic training program?

- a. yes
- b. no

Height/weight

83. What is your current height without shoes? _____ feet and _____ inches

84. What is your approximate current weight without shoes? _____ lbs.

**** INSERT transition** (e.g., *I would now like to ask you some questions about your background and experiences as you were growing up*).

DEMOGRAPHICS AND CRIME IN THE ENVIRONMENT (Common Items)

Family Structure

75. When you were seven, who lived in the same household with you ?(mark ALL that apply.)

- a. Father
- b. Male guardian
- c. Mother
- d. Female guardian
- e. Brother(s) and/or sister(s)
- f. Grandparent(s)
- g. Other relative(s), specify _____
- h. Non-relative(s), specify _____

76. When you were 15, who lived in the same household with you ?(mark ALL that apply.)

- a. I lived alone
- b. Father
- c. Male guardian
- d. Mother
- e. Female guardian
- f. Brother(s) and/or sister(s)
- g. Grandparent(s)
- h. My husband/wife
- i. My children
- j. Other relative(s), specify _____
- k. Non-relative(s), specify _____

Crime in the Environment

77. How safe do you feel in your neighborhood?

- a. always safe
- b. safe the majority of the time
- c. safe about half of the time
- d. at risk the majority of the time
- e. always at risk

78. During the last 12 months, how often....

Never Once Twice 3 or 4 times 5 or more times

- a. Has something of yours (worth under \$50) been stolen
- b. Has something of yours (worth over \$50) been stolen
- c. Has someone deliberately damaged your property (your car, clothing, etc.)
- d. Has someone injured you with a weapon (like a knife, gun, or club)
- e. Has someone threatened you with a weapon, but not actually injured you
- f. Has someone injured you on purpose without a weapon
- g. Has an unarmed person threatened you with injury, but not actually injured you

Education

70. What is the highest level of education that you have completed?

- a. still a high school student
- b. dropped out of high school
- c. graduated from high school
- d. some college
- e. 2-year degree
- f. trade or vocational training beyond high school
- g. 4-yr degree
- h. other, specify _____

71. If you have already completed high school, do you have a regular diploma, a GED, ABE, or some other type of certificate of high school completion?

- a. yes, I have a regular diploma
- b. yes, I have a GED or other alternate high school credential
- c. no

Parents' Education

72. What is the highest level of schooling your father completed?

- a. Completed grade school or less
- b. Some high school
- c. Completed high school
- d. Some college
- e. Completed college
- f. Graduate or professional school after college
- h. Don't know, or does not apply

73. What is the highest level of schooling your mother completed?

- a. Completed grade school or less
- b. Some high school
- c. Completed high school
- d. Some college
- e. Completed college
- f. Graduate or professional school after college
- h. Don't know, or does not apply

**** INSERT transition** (e.g., Finally, I have some questions that I need to ask you so that we can conduct the type of research necessary to completely analyze the perceptions of young people like yourself.)

Race/Ethnicity

67. Do you consider yourself Hispanic?

- a. yes
- b. no

68. Do you consider yourself...

- a. White
- b. Black
- c. Asian or Pacific Islander
- d. or, Other

Marital Status/Dependents

69. Please tell me whether you are currently...

- a. married
- b. widowed
- c. separated
- d. divorced, or
- e. single and have never been married

Date of Birth

79. What is your date of birth?

day/month/year (numeric--6 digit)

ZIP Code (socioeconomic indicator)

74. What is the zip code at the place you consider to be your home?
_____ (5-digit ZIP)

Social Security Number

86. Finally, I would like to ask for your Social Security Number.

SSAN: _____ - _____ - _____

Thank you for your time in completing this survey.

APPENDIX D

OMB JUSTIFICATION MATERIAL

PAPERWORK REDUCTION ACT SUBMISSION

Please read the instructions before completing this form. For additional forms or assistance in completing this form, contact your agency's Paperwork Clearance Officer. Send two copies of this form, the collection instrument to be reviewed, the Supporting Statement, and any additional documentation to: Office of Information and Regulatory Affairs, Office of Management and Budget, Docket Library, Room 10102, 725 17th Street N.W., Washington, DC 20503

1. Agency/Subagency originating request

U.S. Army Research Institute for the Behavioral and Social Sciences

2. OMB control number

b. ☒ None

a. _____

3. Type of information collection (check one)

- a. ☒ New Collection
- b. ☐ Revision of a currently approved collection
- c. ☐ Extension of a currently approved collection
- d. ☐ Reinstatement, without change, of previously approved collection for which approval has expired
- e. ☐ Reinstatement, with change, of a previously approved collection for which approval has expired
- f. ☐ Existing collection in use without an OMB control number

For b-f, note item A2 of Supporting Statement Instructions

4. Type of review requested (check one)

- a. ☐ Regular submission
- b. ☐ Emergency-Approval requested by: ____/____/____
- c. ☐ Delegated

5. Small entities

Will this information collection have a significant economic impact on a substantial number of small entities? ☐ Yes ☒ No

6. Requested expiration date

- a. ☐ Three years from approval date
- b. ☒ Other Specify: 2 yrs. from approval date

7. Title

Modeling the Individual Enlistment Decision

8. Agency form number(s) (if applicable)

9. Keywords **armed forces, military personnel, Army, enlistment propensity**

10. Abstract **The Career Decision Survey captures the attitudes of 16-21 year old youth toward military service, as well as other available career options. It also addresses qualification for service, primarily in terms of aptitude, and their availability. This administration will be used to identify the items that best predict enlistment propensity, and to segment the population by quality and availability factors.**

11. Affected public (Mark primary with "P" & all others that apply with "X")

- a. P Individuals or Households d. _____ Farms
- b. _____ Business or other for-profit e. _____ Federal Government
- c. _____ Not-for-profit institutions f. _____ State, Local or Tribal Govt.

12. Obligation to respond (Mark primary with "P" and all others that apply with "X")

- a. ☒ Voluntary
- b. ☐ Required to obtain or retain benefits
- c. ☐ Mandatory

13. Annual recordkeeping and reporting burden

- a. Number of respondents 4,000
- b. Total annual responses 4,000
 - 1. Percentage collected electronically _____ %
- c. Total annual hours requested 2,000
- d. Current OMB inventory 0
- e. Difference 2,000
- f. Explanation of difference new collection
 - 1. Program change
 - 2. Adjustment

14. Annual reporting and recordkeeping cost burden (in thousands of dollars)

- a. Total annualized capital/startup Costs 0
- b. Total annual Costs (O&M) 0
- c. Total annualized cost requested 0
- d. Current OMB inventory 0
- e. Difference 0
- f. Explanation of difference
 - 1. Program change
 - 2. Adjustment

15. Purpose of information collection (Mark primary with "P" and all others that apply with "X")

- a. _____ Application for benefits e. ☒ Program Planning or Mgmt.
- b. _____ Program evaluation f. P Research
- c. _____ General purpose statistics g. _____ Regulatory or compliance
- d. _____ Audit

16. Frequency of recordkeeping or reporting (check all that apply)

- a. ☐ Recordkeeping b. ☐ Third party disclosure
- c. ☐ Reporting
 - 1. ☐ On occasion 2. ☐ Weekly 3. ☐ Monthly
 - 4. ☐ Quarterly 5. ☐ Semi-annually 6. ☐ Annually
 - 7. ☐ Biennially 8. ☒ Other (describe) one-time

17. Statistical methods

Does this information collection employ statistical methods?

☒ Yes ☐ No

18. Agency contact (person who can best answer questions regarding the content of this submission)

Name: Dr. Peter J. Legree
 Phone: (703) 617-0307

19. Certification for Paperwork Reduction Act Submissions

On behalf of this Federal agency, I certify that the collection of information encompassed by this request complies with 5 CFR 1320.9.

NOTE: The text of 5 CFR 1320.9, and the related provisions of 5 CFR 1320.8 (b)(3), appear at the end of the instructions. The certification is to be made with reference to those regulatory provisions as set forth in the instructions.

The following is a summary of the topics, regarding the proposed collections of information, that the certification covers:

- (a) Is necessary for proper performance of the agency's functions and has practical utility;
- (b) It avoids unnecessary duplication;
- (c) It reduces burden on small entities;
- (d) It uses plain, coherent and unambiguous terminology that is understandable to respondents;
- (e) Its implementation will be consistent and compatible with current reporting and recordkeeping practices;
- (f) It indicates the retention periods for recordkeeping requirements;
- (g) It informs respondents of the information called for under 5 CFR 1320.8 (b)(3)
 - (i) Why the information is being collected;
 - (ii) Use of information;
 - (iii) Burden estimate;
 - (iv) Nature of response (voluntary, required for a benefit, or mandatory);
 - (v) Nature and extent of confidentiality; and
 - (vi) Need to display currently valid OMB control number;
- (h) It was developed by an office that has planned and allocated resources for the efficient and effective management and use of the information to collected;
- (i) It uses effective and efficient statistical survey methodology; and,
- (j) It makes appropriate use of information technology.

If you are unable to certify compliance with any of these provisions, identify the item below and explain the reason in Item 18 of the Supporting Statement.

Sponsoring Official

Date

Reports Clearance Officer

Date

Signature of Senior Departmental Official or Designee

Date

Modeling the Individual Enlistment Decision

Supporting Statement for
Request for OMB Approval

Prepared for:

U.S. Army Research Institute for
the Behavioral and Social Sciences
5001 Eisenhower Avenue
Alexandria, VA 22333-5600

Under:

Contract No. MDA903-93-D-0032
Delivery Order 32

June 30, 1997

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SUPPORTING STATEMENT FOR REQUEST FOR OMB APPROVAL

A. JUSTIFICATION

- 1. Explain the circumstances that make the collection of information necessary. Identify any legal or administrative requirements that necessitate the collection.**

Since the inception of the All Volunteer Force (AVF) in 1973, the military services have had to expend substantial amounts of energy on the recruitment of young men and women to fill their ranks. Each year, the various Services and the Department of Defense spend millions of dollars to ensure that the young people who enter the military are capable of performing the scores of jobs that are required to defend America's national interests. Budgets include funds for personnel who staff recruiting offices, visit schools, and follow up on qualified individuals who express an interest in a tour of duty. Additionally, there are substantial amounts of money devoted to advertising to ensure that the word gets out concerning the opportunities available to young people in the military. These and other efforts are carried out to ensure that the Armed Forces of the United States remain the most capable fighting force in the world.

A necessary part of this process is the monitoring of attitudes about, and intentions towards the military on the part of young people. Without some indication of the impact of recruiting and advertising efforts, there is little basis for making adjustments or anticipating potential shortfalls. The Youth Attitude Tracking Study (YATS), which is currently administered annually to a national probability sample of 16 to 24 year olds, measures youth propensity to enlist in the military services, knowledge of enlistment offerings, recruiting and advertising awareness, and other rotating topics. There is considerable monetary and policy investment in YATS, as each year results are tracked and reported to Congress along with recruiting budget recommendations. Each of the Services is invited to participate in YATS content reviews, and each is provided with the survey results.

In examining YATS data, it is essential that there be some means of categorizing youth on the two dimensions that are the primary measures of recruit quality—high school graduation status and aptitude. These two characteristics, in combination, form the main basis for deciding whether or not an individual is qualified to enter the military. Over the years, many studies have demonstrated that young people who complete high school are more likely to serve effectively and complete their enlistment term than those who do not. Similarly, research has shown that

individuals who score in the upper ranges of the Armed Forces Qualification Test (AFQT) are more effective soldiers, sailors, airmen, and marines. Thus, it is not enough to know the overall propensity rate for youth in general. What is of equal if not greater importance is the level of interest in military service among that segment of the youth population who have been found to be best qualified to serve.

In the past, YATS data have been used to segment the population so as to delineate those of higher and lower quality. The survey includes several questions related to education that allow for a straightforward determination of respondents' status in this regard. The assessment of aptitude, however, has been less easily accomplished. YATS ascertains such estimates indirectly via demographics (age, race/ethnicity, geographic region) and school attendance and achievement patterns (e.g., math courses taken and grades) (Orvis & Gahart, 1989). Such predictors are used to estimate standing on the AFQT—either in the upper (at or above the 50th percentile) or lower end of the distribution.

Unfortunately, the validity of YATS in this regard has declined over the years, and estimation of the relationship between cognitive ability and enlistment intention could stand improvement. The data regarding ability have declined in utility, in that over 60 percent of respondents are estimated to be in the upper half of the aptitude distribution. Problems with existing YATS estimates highlight the importance of an alternative, psychologically-based approach to assessing quality within a national probability sample of youth. In addition, the Army is interested in segmenting the market into more than the current two broad categories in order to increase precision in identifying habits and behaviors of relatively high cognitive ability youth. Such improvement holds implications for directions in marketing and advertising, which the Army can use to protect and enhance its base of recruits for the future.

Although the value of the current propensity measure is not trivial (individuals with the greatest self-reported propensity have a .33 probability of enlisting, while those with the lowest propensity have a .06 probability), it seems reasonable that the predictive power of the propensity scale could also be substantially improved. In addition to an improved ability estimator, other potential content enhancements to the YATS include temperament, career interests, self-efficacy, and knowledge of the military assessment items. During this data collection effort, these upgrades

will be explored. This effort is authorized by 10 United States Code 2358, a copy of which is provided in Appendix A.

2. **Indicate how, by whom, and for what purpose the information is to be used. Except for a new collection, indicate the actual use the agency has made of the information received from the current collection.**

The new data collected will be used by analysts within the Army Research Institute and its prime contractor, the Human Resources Research Organization (HumRRO), to investigate the viability of alternative means of indirectly assessing cognitive ability and enlistment propensity. The measures included in the study have been culled from a wide variety of sources, including prior research in this area. They have been evaluated on the basis of previous findings, and those with the greatest apparent face validity selected for inclusion here. Their actual validity will be determined by relating responses to the items on the survey with subsequent enlistment behavior. That is, after a sufficient interval, the database created through this research will be matched with military databases maintained by the Defense Manpower Data Center. This will allow us to identify individuals who took part in the present study and subsequently entered the military. Further, actual aptitude measures will be available through these individuals' service records. Through correlational and multivariate analyses, we will be able to determine: (1) how well, and in what combination, the candidate measures of propensity were able to predict actual enlistment; and (2) among those who did enlist, how well, and in what combination, the aptitude estimators were able to differentiate between those falling within various ranges. At no time will individual data be used or reported. That is, interest is only in the aggregate information and relevant subgroups (high/low propensity, enlistees/non-enlistees, aptitude levels).

As mentioned previously, although YATS data as currently collected yield important and meaningful information for those responsible for recruiting, there is definite room for improvement. Currently, decisions regarding the expenditure of large amounts of recruiting dollars are made based on information that is somewhat suspect in terms of the accuracy with which it identifies levels of propensity among the recruiting age population overall, as well as within the most desired subgroups. This effort will lead to much more refined predictions overall, and therefore provide recruiters and policy makers with a vastly improved measure of propensity among the desired portion of the youth population. This, in turn, will allow for a

more expeditious use of shrinking recruiting resources to guarantee the continued quality of military manpower. If this effort is not undertaken, it seems likely that the viability of the current measures of propensity and aptitude will continue to erode, further challenging the usefulness of YATS to the recruiting community. Given that YATS is the major source of information regarding the intentions of youth towards military service, its improvement is vital to future resource planning and recruiting success.

3. **Describe whether, and to what extent, the collection of information involves the use of automated, electronic, mechanical, or other technological collection techniques or other forms of information technology, e.g. permitting electronic submission of responses, and the basis for the decision for adopting this means of collection. Also describe any consideration of using information technology to reduce burden.**

The Career Decision Survey will be administered by the Computer Assisted Telephone Interview (CATI) technique which will reduce respondent reading and writing burden. CATI entails programming all question text, choices, and logical skip patterns as well as interviewer instructions and help screens. Pretesting of the CATI version of the questionnaire and employing trained interviewers ensures efficient and accurate data collections and minimizes erroneous responding. Furthermore, CATI results in relatively short turnaround time, allows for detailed status reports or tracking of sample disposition and quotas, and minimizes data cleaning.

Through computer control of the questionnaire administration process and the monitoring of responses, the CATI system offers the capacity for substantial improvements in data quality and data collection efficiency over a standard telephone survey conducted using paper and pencil. Missing or inconsistent data are greatly reduced because questionnaire skip patterns are computer- rather than interviewer-controlled. The CATI system also offers accurate and efficient scheduling of calls and the generation of reports on sample disposition, field status, and interviewer performance. A hard copy version of the questionnaire appears in Appendix B. The live instrumentation will be conducted via a single software package with appropriately programmed skip patterns.

In addition, the word knowledge component of the survey uses computer adaptive testing techniques, in which the software selects the next item to present based on previous answers. This method allows the software to obtain an estimate of word knowledge using a sample of only 10-15 of the more than 250 available items.

4. Describe efforts to identify duplication. Show specifically why any similar information already available cannot be used or modified for the purposes described in Item 2 above.

The issue of enlistment propensity has been the subject of some attention ever since the inception of the AVF. Manpower policy makers and implementers recognized that, without some advance indication of levels of interest in military service, planning and resource allocations would be nearly impossible to carry out effectively. Therefore, the Gilbert Youth Surveys—the forerunner of YATS—were initiated in conjunction with the transition to the volunteer force.

Since that time, several other large scale data collection efforts have been carried out to study the issues surrounding enlistment propensity. For instance, the Army Communications Objectives Survey (ACOMS) involved a nationally representative sample of youth between the ages of 16 and 24. They were surveyed between October 1986 and January 1988, at which time they were asked questions regarding various issues related to the enlistment decision process, perceptions of various components of the Army, and advertising. These data have undergone extensive analyses, including attempts to integrate the various influences on the enlistment decision into a comprehensive model (Nieva, Wilson, Norris, Greenless, Laurence, & McCloy, 1995). Such efforts have been carefully reviewed for their relevance to the current study, and the results used to formulate the research plan. However, the overall goals of ACOMS and other related work do not match those of the present research, which is to identify a limited set of predictors of aptitude and propensity that can be used to enhance and refine the data currently collected through YATS. In addition, these preceding efforts were conducted some time ago, which makes the relevance and validity of the resulting data suspect given major changes in the national and international state of affairs. More precise information is needed on the aptitudes, enlistment intentions, and market segmentation to improve the recruiting capability of the Army.

The present effort is unique in several ways. Perhaps most importantly, it is an attempt to capitalize on the models of decision making behavior—both in the military enlistment and other contexts—that have arisen from previous research, and use them in an operational context to provide more accurate information to decision makers. In order to do this, means must be found to tap the various dimensions involved and to do so in the context of an interview conducted via

telephone. Thus, the survey to be conducted here will result in data that will allow us to determine the best combination of measures and measurement techniques to refine estimates of cognitive ability and propensity to join the military. Although previous research studies have examined these issues, none has done so with the goal of direct real world application that will have an immediate impact on resource allocation and planning functions.

5. If the collection of information involves small business or other small entities, describe methods used to minimize burden.

The survey will be administered to individuals and therefore is not a burden to small businesses or other small entities.

6. Describe the consequences to Federal program or policy activities if the collection were not conducted or were conducted less frequently, as well as any technical or legal obstacles to reducing burden.

The information will be collected only once. If the collection were not conducted, the Army would not have the information of improved relevance and validity needed to fulfill and improve upon its recruiting mission. The declining validity and usefulness of the currently collected YATS data can hamper the Army's ability to continue to attract a recruiting base of sufficient size and quality needed to maintain the quality of the Army's labor force and its capability as an effective defensive force.

There are no specifically relevant technical or legal obstacles to reducing burden.

7. Explain any special circumstances that require the collection to be conducted in a manner inconsistent with guidelines in 5 CFR 1320.6.

The data collection effort in connection with this project will be conducted according to the guidelines specified in 5 CFR 1320.6.

8. If applicable, provide a copy and identify the date and page number of publication in the Federal Register of the agency's notice, required by 5 CFR 1320.8 (d), soliciting comments on the information collection prior to submission to OMB. Summarize public comments received in response to that notice and describe actions taken by the agency in response to these comments. Specifically address comments received on cost and hour burden.

Publication and solicitation of comments will be completed by ARI in July.

Describe efforts to consult with persons outside the agency to obtain their views on the availability of data, frequency of collection, the clarity of instructions and

record keeping, disclosure, or reporting format (if any), and on the data elements to be recorded, disclosed, or reported.

Guidance was sought from numerous individuals well versed in the issues surrounding enlistment decision making, aptitude estimation, and Computer-Assisted Telephone Interviewing. Through consultation with such individuals and a review of related reports and other relevant surveys, the attached instrument submitted for approval was designed to be the most appropriate for the purposes described above. Persons contacted to provide guidance on all phases of the project include:

Dr. Janice Laurence
Human Resources Research Organization
(703) 705-5648
Contacted 1997

Dr. Paul Sticha
Human Resources Research Organization
(703) 706-5635
Contacted 1997

Dr. Michael Wilson
Westat, Inc.
(301) 251-1500
Contacted 1997

Consultation with representatives of those from whom information is to be obtained or those who must compile records should occur at least once every 3 years – even if the collection of information activity is the same as in prior periods. There may be circumstances that may preclude consultation in a specific situation. These circumstances should be explained.

Respondents will not be required to compile records and will only be providing information once. Respondents will be individual youths. Respondents will not have any representatives or organizations representing them with whom one could consult. Thus, these circumstances preclude consultation.

- 9. Explain any decision to provide any payment or gift to respondents, other than remuneration of contractors or grantees.**

No payments or gifts will be provided to respondents.

10. Describe any assurance of confidentiality provided to respondents and the basis for the assurance in statute, regulation, or agency policy.

After introducing themselves and the purpose of the call, interviewers will insure respondents of the confidentiality of their responses in compliance with the Privacy Act of 1974 and OMB Circular A-108. In addition to the interviewer's pledge, there are safeguards designed to protect the confidentiality of all individual data. Analyses and publication of research findings will be of an aggregate statistical nature only. Respondents will not be identified in any publication or presentation. Furthermore, their names and identifying information will not be made available to implements specific procedures for data handling and record keeping to honor the guarantee made individuals or groups.

Individual identifiers are associated with the data only for purposes of data collection and analysis. The contractor maintains the strictest confidentiality of all individual data collected in the survey and to survey respondents. Responses to survey questions are automatically coded into the CATI system; there are no printed documents with individual information.

The contractor for this effort, the Human Resources Research Organization (HumRRO) maintains a committee competent to review projects and activities that involve human subjects in accordance with the Multiple Project Assurance (M-1195) currently on file with the Department of Health and Human Services. This committee will ensure that legally effective informed consent is obtained and respondent privacy is honored.

11. Provide additional justification for any questions of a sensitive nature, such as sexual behavior and attitudes, religious beliefs, and other matters that are commonly considered private. This justification should include the reasons why the agency considers the questions necessary, the specific uses to be made of the information, the explanation to be given to persons for whom the information is requested, and any steps to be taken to obtain their consent.

There are no truly sensitive questions in the survey. Several domains, such as school performance and parental background information might be considered by some to be private, but questions of this nature are commonly asked on college applications and other requests for information. They are important to this effort because these are factors that have been found to be related to propensity, aptitude, or both. Having been culled from prior research in this area, their inclusion on this survey is essential. It is also important to note that respondents are told at

the start of the interview that they can refuse to answer any questions that they choose.

Therefore, if items of this benign nature cause participants any discomfort at all, they can simply decline to respond.

12. **Provide estimates of the hour burden of the collection of information. The statement should: Indicate the number of respondents, frequency of response, annual hour burden, and an explanation of how the burden was estimated. Unless directed to do so, agencies should not conduct special surveys on which to obtain information on which to base hour burden estimates. Consultation with a sample (fewer than 10) of potential respondents is desirable. If the hour burden on respondents is expected to vary widely because of differences in activity, size, or complexity, show the range of estimated hour burden, and explain the reasons for the variance. Generally, estimates should not include burden hours for customary and usual business practices.**

It is estimated that a total of 4,000 16 to 21 year-old males and females will be interviewed for an average of 30 minutes per respondent. Data will be collected from each respondent only once. Westat, Inc., the survey administrator, has estimated, based on experience with computerized telephone survey administration, that the administration of this survey will require approximately 30 minutes for each individual respondent. Therefore, the total annual hour burden for respondents is expected to be 2,000 hours. The hour burden will vary for respondents based on the length of their answers. This variance in the hour burden for individual respondents is expected to be a few minutes less than or greater than the 30 minute average. As this is a new survey, it was not included in the agency's Information Collection Budget (ICB). The requirement to collect this information did not arise until after the ICB was submitted.

If this request for approval covers more than one form, provide separate hour burden estimates for each form and aggregate the hour burdens in Item 13 of OMB form 83-I.

There are six versions of the survey that present different subsets of the total set of items shown in Appendix B. One of the versions will be randomly chosen to be presented to each respondent. The versions were designed to be of the same length, and thus represent an essentially equal burden.

Provide estimates of annualized cost to respondents for the hour burdens for collections of information, identifying and using appropriate wage rate categories. The cost of contracting or of paying outside parties for information collection should not be included here.

This voluntary survey bears no direct, monetary costs to respondents. They will be interviewed by telephone at home at a convenient time for them.

- 13. Provide an estimate of the total annual cost burden to respondents or recordkeepers resulting from the collection of information. (Do not include the cost of any hour burden shown in Items 12 and 14). The cost estimate should be split into two components: (a) a total capital and start-up cost component; and (b) a total operation and maintenance and purchase of services component.**

This voluntary survey bears no capital and start-up costs or any costs for operation, maintenance, or purchase of services for respondents.

- 14. Provide estimates of annualized cost to the Federal government. Also, provide a description of the method used to estimate cost, which should include quantification of hours, operational expenses (such as equipment, overhead, printing, and support staff), and any other expense that would not have been incurred without this collection of information.**

This evaluation is being conducted for the United States Army's Office of the Deputy Chief of Staff for Personnel by HumRRO under contract to the Army Research Institute (ARI). The contract costs to the government are estimated as follows:

Cost to Federal Government

Personnel Costs	Hours	Rate	Amount
Prime Contractor			
Principal Investigator (Behavioral)	472	90.94	42,924
Principal Investigator (Analytic)	840	106.85	89,754
Senior Technical (Behavioral)	536	68.89	36,925
Senior Technical (Analytic)	362	72.69	26,314
Mid-range Technical (Behavioral)	1,128	46.99	53,005
Mid-range Technical (Analytic)	942	63.86	60,156
Mid-range Technical (Data Collection)	1,440	33.35	48,024
Clerical	200	49.24	9,848
Subcontractor—Westat			
Senior Technical (Behavioral)	67	74.00	4,958
Mid-Range Technical (Behavioral)	67	57.32	3,840
Mid-Range Technical (Analytical)	67	66.25	4,439
Mid-Range Technical (Data Collection)	1,865	40.56	75,644
Data Collection Technicians	14,962	22.19	332,006
Subcontractor—Survey Research Center			
Principle Investigator (Behavioral)	535	158.83	84,974
Senior Technical (Analytic)	680	38.64	26,275
Entry-level Technical	1,038	25.94	26,926
Consultant			17,797
Total Salaries	25,201		943,809
Other Direct Costs			
Computer Costs (computing + survey related)			32,985
Telephone Survey Costs			41,670
Travel			24,412
M&S (copying, postage, courier, shipping)			8,553
Total Other Direct Costs			107,620
Total Contract Costs			1,051,429

15. Explain the reasons for any program changes or adjustments reported in Items 13 or 14 of the OMB Form 83-1.

There are no program changes or adjustments to the information provided in Items 13 and 14 on OMB Form 83-1.

16. For collections of information whose results will be published, outline plans for tabulation and publication. Address any complex analytical techniques that will be used. Provide the time schedule for the entire project, including beginning and ending dates of the collection of information, completion of report, publication dates, and other actions

Plans for Analysis and Publication

A. Time Schedule

The project timetable is shown in Table 1 below. Data collection efforts are scheduled to begin about 1 September, following OMB clearance.

Table 1
Project Timetable

Task	Start	Complete
Task 1. Management Plan	15 May 1997	30 May 1997
Task 2. Develop Interview Guide	2 June 1997	16 June 1997
Task 3. Develop Sampling Plan	2 June 1997	16 June 1997
Task 4. Prepare OMB Approval Request	2 June 1997	16 June 1997
Task 5. Prepare Use of Human Subjects Committee Review Package	16 June 1997	30 June 1997
Task 6. Implement Sampling Plan	11 September 1997	25 September 1997
Task 7. Pretest Interview Guide	1 August 1997	8 August 1997
Task 8. In Process Review	As-needed	As-needed
Task 9. Conduct Interviews	1 October 1997	16 December 1997
Task 10. Preliminary Data Analysis and Review	17 December 1997	16 January 1998
Task 11. Complete Interviews and Data Analysis	17 December 1997	31 January 1998
Task 12. Create Interview Database	17 December 1997	31 January 1998
Task 13. Project Documentation	17 December 1997	13 February 1998

B. Analysis Plans

Analyses of the data collected through this effort will be performed to accomplish the following:

- Comparison of sample characteristics with those of the same subpopulation (16-21 year-old males) from the previous years YATS. This will involve descriptive and simple comparative statistics (frequencies, Chi squares, t-tests) to determine if there are significant differences between the two groups. Based on the outcomes of such comparisons, weights will be calculated to adjust the sample so that it mirrors YATS (which, in turn, is weighted to reflect the national population of young males).
- Descriptive statistics (frequencies, crosstabulations) will be calculated to provide analysts and policy makers with an overview of the survey results. This will provide a background for the exploratory analyses that will be undertaken to address specific project questions.
- Using techniques currently applied to YATS data, composite measures of propensity to join the military and estimates of aptitude will be derived. Propensity is assessed through a variety of questions on the survey, and the approach typically taken in YATS is to use the most positive expression of interest as the propensity measure for each individual. Aptitude is estimated through a combination of data included both here and in YATS (hours reported spent on schoolwork, self-reported grades, parents' education level). The same formulas currently used will be employed here (see Orvis, Sastry, & McDonald, 1995).
- To test and validate alternative methods of propensity and aptitude estimation, actual behaviors/measures must be available. Therefore, as military accession records are updated on a quarterly basis, they will be matched with the database created through this project to identify members of our sample who have enlisted. As sufficient numbers become available, model building will ensue.
- Hierarchical regressions, along with other multivariate techniques such as cluster and discriminant analyses will be run to determine the set of variables that best predict enlistment behavior and aptitude. Alternate models for meaningful subsets of the population (e.g., age cohort, race/ethnicity, geographic region) will also be developed to the degree necessary to achieve the most highly predictive set(s) of variables.

C. Publication Plans

A publication will be produced to document the survey procedures, methodology and response data. This manual will thoroughly describe the background to the project, the outcomes and implications of the literature review, the steps taken to design the survey and select the sample, the procedures used in implementing the survey, and the results achieved. The final report will contain a list of all the variables and response data for the questionnaire items. The report will concentrate on the presentation of information most relevant to enlistment decisions and market segmentation in readily understandable charts and tables, and include any conclusions and

recommendations of the authors. In addition, a separate codebook will be produced that will thoroughly document the contents of the datafile(s) resulting from this effort, thereby allowing future researchers to further explore the findings.

17. If seeking approval not to display the expiration date for OMB approval of the information collection, explain the reasons that display would be inappropriate.

We are seeking approval not to display the expiration date for OMB approval of the information collection because this is a telephone survey and respondents will not receive any hard copies of the survey on which the expiration date could be displayed. Explanation of the expiration date for OMB approval to the telephone respondents would add to the total hour burden of individuals responding to the survey and the time spent on the technical explanation might detract from their willingness to continue to complete the survey.

18. Explain each exception to the certification statement identified in Item 19, "Certification for Paperwork Reduction Act Submissions," of OMB Form 83-I.

There are no exceptions to the certification statement in Item 19 of OMB Form 83-I.

B. COLLECTION OF INFORMATION EMPLOYING STATISTICAL METHODS

- 1. Describe (including numerical estimate) the potential respondent universe and any sampling or other respondent selection method used. Data on the number of entities (e.g., establishments, state and local government units, households or persons) in the universe covered by the collection and in the corresponding sample are to be provided in tabular form for the universe as a whole and for each of the strata in the proposed sample. Indicate expected response rates for the collection as a whole. If the collection had been conducted previously, include the actual response rate achieved during the last collection.**

Respondent Universe

The information used to establish the dimensions of the sample frame as well as total sample size included Current Population Reports Series: *Population Characteristics* P20-483, tabulations run on the Current Population Survey (CPS) data tape for March 1995, and historical screening and cooperation rates achieved in similar surveys by Westat.

We begin estimation of sampling requirements by focusing on the prevalence of eligible males in households. Since male and female prevalence is approximately equal, the final estimate of sample requirements will be a ratio adjustment of sample requirements for

interviewing males. In *Population Characteristics* P20-483 (Table 17, p. 157) it is estimated that there were approximately 97,107,000 households in the United States as of 1994. The expected number of eligible youth is presented in Table 1. From these two sources we determined that it will require, on average, calls to approximately 9.6 households to contact a male eligible for this study.

Table 1. Estimated Number of Eligible Youth 16 to 21 Years Old^a

Age	Eligible ^b Males	Eligible Females	Persons in Telephone Households		Total Youth
			Eligible Males	Eligible Females	
16	2,071,136	1,922,200	1,929,203	1,790,474	3,719,677
17	1,923,637	1,847,163	1,786,571	1,715,546	3,502,117
18	1,811,278	1,789,688	1,664,775	1,644,931	3,309,705
19	1,872,036	1,850,522	1,738,629	1,718,648	3,457,277
20	1,625,746	1,692,940	1,482,003	1,543,255	3,025,258
21	1,682,190	1,772,950	1,520,503	1,602,540	3,123,043
Total	10,986,023	10,875,463	10,121,684	10,015,394	20,137,077

^a Source: Tabulations of September and October 1996 CPS data file.

^b "Eligible" youth are those with no prior military experience.

Table 2 presents screening assumptions used in determining total sample size requirements. A sample of approximately 79,000 telephone numbers will be required to complete 2,000 interviews with males in the targeted age range. Of this number, 14 percent will be screened from the sample mechanically as either business or nonworking numbers. Further reductions for residency and contact rate bring the sample size down to 29,268 identified households. Eligibility, screening and response rates bring the number of completed interviews to 2,000.

Table 2. Total Screening Effort Assumptions: Male Sample

Total Number of Telephone Numbers	78,853	
Sample Following Mechanical Screening	67,813	0.14 Business/Nonworking Screening
Total Potential Households	35,263	0.52 Residency Rate
Identified Households	29,268	0.83 Contact Rate
Households w/Eligible Males	3,049	9.6:1 Eligible Rate
Households Completing Screening	2,500	0.82 Screening Rate
Completed Male Interviews	2,000	0.80 Response Rate

In the process of screening and interviewing 2,000 males, we expect, on the basis of past surveys, to complete surveys with approximately 1,300 eligible females. Additional screening will be required to complete interviews with 2,000 females. As a result, an additional 27,600 telephone numbers will need to be included in the total sample bringing its size to 106,453.

Objectives of the Sampling Plan

The sampling plan is designed to select a national probability sample of youth aged 16 to 21. The sample is to be representative of male and female youth nationally.

Creation of the Sampling Frame

The sample frame is defined as youth residing in the 50 states and the District of Columbia who:

- Are at least 16 years old, and less than 22 years old;
- Reside in households or noninstitutionalized group quarters with telephones; and
- Have never served in the U.S. Armed Forces and are not, at the time of the interview, accepted for such service (service included the active and reserve components of U.S. Army, Navy, Air Force, Marine Corps, and Coast Guard).

The sample frame excludes individuals enrolled in postsecondary Reserve Officer's Training Corps (ROTC) programs. Individuals enrolled in high school ROTC programs, however, are included in the sample frame provided they meet all other eligibility criteria.

The sample frame will be constructed using a list-assisted random-digit dialing (RDD) methodology. The method of list-assisted RDD sample frame construction relies on the use of 100 number banks. A 100 number bank consists of the first eight numbers of an individual telephone number (area code + prefix + next two numbers). Each bank of eight digits is capable of generating 100 individual numbers by filling the last two positions of the bank with numbers ranging from 00 through 99.

In constructing the sample frame, we will divide the population of 100 number banks from the Bellcore file—a file of all exchanges in the United States—into two strata.¹ The first stratum consists of all telephone numbers in 100 number banks that have at least one number

¹ Numbers in the Bellcore frame in exchanges that are not available for residential use, such as 800 numbers and cellular telephone number banks, are excluded from the sample frame.

listed in a white-page directory (i.e., a listed residential telephone number). This stratum is termed the listed stratum. The second stratum is the zero-listed stratum, containing telephone numbers in 100-banks that have no listed residential telephone numbers. The sample frame includes all numbers in the listed 100 number banks. From this frame, an epsem, or equal probability sample will be drawn.

Stratification

The sample will not be stratified.

Sample Allocation and Selection

Cost-variance optimization is not an issue for this survey as there is no stratification or other allocation features.

Estimation and Weighting

Due to nonresponse and other factors, the sample of respondents that will be obtained is complex. As a consequence, the survey sample will have to be weighted in order to produce representative and nationally projectable findings. The proposed weighting methodology is described below.

Weighting will be divided into four steps: (1) base weights, depending on the number of telephone numbers in a household will be assigned to each respondent in the sample; (2) nonresponse adjustments will be calculated by age and geographic residence groups and applied to the base weights; (3) poststratification ratio adjustments will be calculated by a raking process to derive the final weights; and (4) jackknife replicate weights will be calculated for variance estimation purposes.

Base Weights. The sample was drawn using a list-assisted RDD design. Under the list-assisted approach, telephone households generally have the same overall probabilities of selection. Therefore, the base weight (w_{jkl}^{base}) assigned to sampled persons will depend primarily on the number of residential telephone numbers in the household. Households with two or more residential telephone numbers will have their base weight divided by two to reflect the greater probability of selection these households have over households with only one telephone number.

Nonresponse Weights. Separately for each of the four cells defined by crossing gender and age group (where age group = 1 if age is 16 to 18; and 2 if age is 19 to 21), the nonresponse

adjustment ratio, R_{jk} , will be calculated as:

$$R_{jk} = \frac{n_{jk}^{nr} + n_{jk}^r}{n_{jk}^r}$$

where n_{jk}^r is the unweighted count of persons in cell jk (i.e., gender = j and age group = k) who completed the extended interview, and n_{jk}^{nr} is the corresponding unweighted count of persons who were eligible for but did not complete the extended interview.

The nonresponse-adjusted weight, w_{jkl}^{adj} , for the l^{th} respondent in nonresponse adjustment cell jk will be calculated as:

$$w_{jkl}^{adj} = R_{jk} * w_{jkl}^{base}$$

where w_{jkl}^{base} is the base weight of the l^{th} respondent in cell jk .

Poststratification (Raking) Adjustment. The final step in calculating full sample adjustment weights will be to adjust weighted counts to known population totals. This last step increases the precision of survey estimates by bringing them into alignment with known population values.

It is expected that two dimensions will be used in this adjustment. The proposed dimensions are: (1) age crossed with gender and (2) race/ethnicity crossed with educational attainment. The adjustment process is iterative. First, weighted (w_{jkl}^{adj}) values will be produced for each cell in one of the dimensions. These weights are then adjusted so that weighted values equal the corresponding population values. These new weights are then used to produce weighted values for the second dimension. The new weights are further adjusted to reproduce the population values along the second dimension. This process of fitting one dimension then the other is repeated until a preset degree of precision is met in both dimensions with a single set of adjustment weights (a common precision imposed is the requirement that no sample estimate for any cell of either dimension deviate from the population value by more than 100).

Jackknife Replicate Weights. Standard statistical software assumes simple random sampling (SRS) in the calculation of statistical significance tests. The survey will not produce SRS estimates. As a consequence the data must be weighted and, further, the weights will not be constant across cases. Several methods are available for estimating the sampling errors of statistics based on complex sample designs. Among the more commonly used are the Taylor series linearization method and two replication methods, Jackknife and Balanced Repeated Replication (BRR). By taking the complexities of the sample design into account, these methods provide comparable estimates of the variance for many survey statistics. We propose to use the Jackknife method.

The Jackknife method is relatively straightforward. Essentially a number of subsamples are drawn from the full sample. For each subsample, weights are calculated that replicate the population values used during the production of the full sample weight (i.e., weight the subsample to population values). Once weights have been calculated for all subsamples, empirical estimates of sample variance can be produced and so valid statistical tests for nearly any statistic of interest. The sample variance of an estimate is

$$\text{Var } P = \frac{\sum (P_f - P_r)^2}{R}$$

where R is the number subsamples (replicates) drawn, P_f is the value of P using the full sample weight, and the P_r s are the estimates of P produced by the subsamples.

Replicates, or subsamples, will be formed by sorting records by case identification number, telephone number, or some other unique value associated with every case. After sorting, cases will then be sequentially assigned replicate codes (in the range 1 through 51) equal to $i + 1$ where i was the code assigned to the previous record. When $i = 52$, the counter is reset at one and the process continues until all cases are assigned replicate codes. If a case is assigned the designation of replicate 23, for example, it will be deleted from this particular replicate sample for variance estimation purposes. Each replicate, therefore, contains a sample of 50/51 (or approximately 98 percent) respondents.

The calculation of replicate weights proceeds in two steps. First, base weights are assigned to each case within a replicate. The base weight is equal to the nonresponse adjustment weight described above. The second, and final step in replicate weighting calculation, consists of raking of the nonresponse adjustment weights in two dimensions to the population totals used during the calculation of full sample weights.

2. Describe the procedures for the collection of information including:

- **Statistical methodology for stratification and sample selection,**
- **Estimation procedure,**
- **Degree of accuracy needed for the purpose described in the justification,**
- **Unusual problems requiring specialized sampling procedures, and**
- **Any use of periodic (less frequent than annual) data collection cycles to reduce burden.**

Statistical Methodology for Stratification and Sample Selection

The list-assisted sample selection methodology divides the entire frame of 100 number banks from the Bellcore file into two strata. The first stratum consists of all telephone numbers in 100 number banks that have at least one number listed in a white-page directory (i.e., a listed residential telephone number). This stratum is termed the listed stratum. The second stratum is the zero-listed stratum, containing telephone numbers in 100-banks that have no listed residential telephone numbers. The sample frame will include all numbers in the listed 100 number banks. From this frame, an epsem, or equal probability sample will be drawn. Once the total required sample size (n^k) is determined, this estimate will be used to determine the proper selection interval I^k which is defined as N^k/n^k (N^k is the total number of telephone numbers contained in the sample frame). Actual selection requires sorting the list of telephone numbers by area code and exchange then systematically selecting each I^k th number after selecting a random starting point within the first I^k numbers.

To reduce total survey effort, we will use two methods for prescreening sampled telephone numbers. Both methods are automated and require no interviewer telephone time. These prescreening methods are designed to identify and remove from survey administration consideration, business and nonworking numbers. Termed business and tritone number purging, these activities increase the efficiency of survey administration operations.

These procedures involve the following activities:

- **Matching telephone numbers against residential White Page listings and Yellow Page listings.** Numbers appearing in both listings are classified as residential. Numbers only appearing in Yellow Page business listings are classified as nonresidential and removed from the sample; and
- **Identification of tritone signals (the three-bell sound heard when dialing a nonworking number).** If a tritone is encountered, that number is labeled as nonworking and removed from the sample.

At the conclusion of tritone and business purging the sample is ready for survey administration.

Estimation Procedure

See above discussion of Estimation and Weighting.

Degree of Accuracy Needed

Accurate estimates of enlistment propensity are needed in order to provide useful information to the Army for predicting enlistments, segmenting the youth market, and improving the effectiveness of the use of recruiting resources. The accuracy of estimates will be affected by the sample sizes available for the analyses to be conducted. Two aspects of the research design will affect the degree of accuracy one can expect to attain in these analyses. First, some items, termed the variable items, will be obtained from only one-half of the respondents. Information regarding propensity, aptitude, and demographics (i.e. the fixed items) will be obtained from all respondents; however, the remaining items (i.e., the variable items) will be divided into four categories, and each respondent will receive items from two of the categories. Consequently, there are six forms of the survey, covering all possible combinations of two categories chosen from the four available categories. This design is used to minimize the length of survey to be presented to each respondent while increasing the overall number of items that can be analyzed for their utility for predicting propensity and enlistment.

Second, a goal of the research is to relate propensity and aptitude information obtained in the survey to other information that will be available later for the subset of respondents who decide to apply to and enlist in the military. Based on application and enlistment rates in the youth population, we estimate that 20% of the survey sample will apply and 10% will enlist. Thus, for these analyses only a subset of the original full sample of respondents will have application and enlistment data that can be used. The size of the sample that can be used to test

various relationships is shown in Table 3. Because we can only obtain this information from the respondents who are willing to supply their social security number, this estimate represents an upper bound on the number of cases that can be used to compare survey results to enlistment data. The approximately 200 males and 200 females on which we expect to have application and enlistment data is considered the minimum sample size for conducting accurate analyses on the relationships between survey variables and application and enlistment data.

Table 3
Estimated Sample Size for Various Comparisons

Type of Comparison	Sample Size
Estimates of enlistment propensity, aptitude, or demographic variables	Full sample (4,000)
Relationships between variable items and either propensity or aptitude	One-half of sample (2,000)
Relationships between variable items in the same group	One-half of sample (2,000)
Relationships between variable items in different categories	One-sixth of sample (666)
Relationships of propensity, aptitude, or demographic variables to later enlistment information	Approximately 20% of sample (800)
Relationships of other variables to later enlistment information	Approximately 10% of sample (400)

Unusual Problems Requiring Specialized Sampling Procedures

There are no problems with the proposed sample that requires use of specialized sampling procedures.

Any Use of Periodic Data Collection Cycles to Reduce Burden

This is a one-time data collection effort.

3. **Describe methods to maximize response rates, and to deal with issues of non-response. The accuracy and reliability of information collected must be shown to be adequate for intended uses.**

Response rates will be maximized through the careful recruiting and training of interviewers and monitoring of interviewer performance by supervisors. Potential new interviewers will be scheduled for training only after they have demonstrated the ability to clearly read several prewritten scripts. They must possess a clear and pleasant voice.

Besides instrument-specific and CATI training, all interviewers are trained in the techniques of refusal avoidance. It is especially important that interviewers are taught the necessity of completing the screener before accepting a breakoff.

Based upon actual interviewing performance (or past performance if a veteran interviewer), up to one-third of interviewers will receive advanced training in refusal conversion. All cases that have ever refused cooperation at any time during the screener or extended interview will be worked exclusively by interviewers trained in refusal conversion.

Even with these efforts, there will be a portion of cases that refuse to participate in the survey. This nonresponse is taken into account during the weighting of survey data.

4. **Describe any tests of procedures or methods to be undertaken. Testing is encouraged as an effective means of refining collections of information to minimize burden and improve utility. Tests must be approved if they call for answers to identical questions from ten or more respondents. A proposed test or set of tests may be submitted for approval separately or in combination with the main collection of information.**

We will conduct several small trials of the survey to verify the accuracy of the CATI programming, to resolve ambiguities in specific questions, and to obtain refined estimates of respondent burden. Trials will be conducted on survey components to minimize the burden for each respondent. The information gathered will be used to revise the instrument to increase its clarity and to reduce the respondent burden. These tests will not require more than nine individuals to provide answers to identical questions.

One component of the survey, the telephone test of word knowledge, has been tested on 149 enlisted Army recruits in the Delayed Entry Program. This test confirmed the feasibility of presenting such a test in a telephone format, provided the information required for calculating the burden, and established a correlation of .67 between scores on the telephone test and AFQT.

5. **Provide the name and telephone number of individuals consulted on statistical aspects of the design and the name of the agency unit, contractor(s), grantee(s), or other person(s) who will actually collect and/or analyze the information for the agency.**

This evaluation is being conducted for the United States Army's Office of the Deputy Chief of Staff for Personnel by HumRRO under contract to the Army Research Institute (ARI). Statistical aspects of the design, implementation of the survey in CATI format, and conduct of the interviews

will be performed Westat, Inc. The following people were consulted on statistical aspects of the design.

Dr. Janice Laurence
Human Resources Research Organization
(703) 705-5648
Contacted 1997

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APPENDIX E
MONITORING THE FUTURE ANALYSIS

**TRENDS IN MILITARY PROPENSITY AND THE PROPENSITY-ENLISTMENT
RELATIONSHIP**

Monitoring the Future Occasional Paper 39

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1997

Introduction¹

The United States ended military conscription in 1973 and undertook for the first time the task of maintaining a large peacetime force based on voluntary enlistment. The nation implicitly substituted a market place philosophy of military manpower for previously accepted notions of citizenship obligations.² Thus, the military services compete in a labor market with other employers, colleges, and universities for desirable young workers. Cognitive aptitude is one of the primary dimensions of personnel desirability. Graduation from high school, performance on cognitive aptitude tests, and desire to enter college are all useful as indicators of such aptitude.

As a consequence of entering the labor marketplace, the Department of Defense and the individual services initiated large scale programs of market research aimed at monitoring the quantity and quality of personnel in the civilian labor force who might be available for voluntary

¹ This research is financially supported by The Army Research Institute (contract no. MDA903-D-0032) through a sub-contract from Human Resources Research Organization (HumRRO). Data were collected under grant number DA01411 from the National Institute on Drug Abuse. The views, opinions, and/or findings contained in the paper are those of the authors and should not be construed as an official Department of the Army position, policy, or decision, unless so designated by other official documentation. We have appreciated both the good ideas and sound advice of Peter Legree from the Army Research Institute, and Dick Harris and Janice Laurence from HumRRO.

² Charles C. Moskos, "The Marketplace All-Volunteer Force," in *The All-Volunteer Force after a Decade*, eds. William Bowman, Roger Little, and G. Thomas Sicilla (Washington: Pergamon-Brassey's, 1986), 15-22.

military service. One element of this research program has been microdata analysis based upon large scale longitudinal surveys of youth.³

This report explores one such survey program, the University of Michigan's Monitoring the Future (MtF) project. MtF has been surveying high school seniors since 1975 and tracking their subsequent life-course trajectories up to the age of 35. We use a portion of these data to address three interrelated questions.

1. What is the relationship between high school seniors' plans or "propensity" to enlist in the armed forces and their actual enlistment behaviors during the first five or six years after high school--the time interval within which entrance into military service (or college) is most likely to occur? Like any market research, the measurement of propensity is useful primarily as a predictor of market behavior. If people who say they will join the military do not enlist, the utility of propensity data for personnel management is limited.

2. How does this military propensity-enlistment relationship compare with the relationship between college plans and actual college attendance--specifically, do the military plans of high school seniors predict enlistment as well as their college plans predict college entrance? In this connection, we acknowledge the competition between the armed forces and institutions of higher education for many of the same high cognitive aptitude personnel, the use of educational incentives to motivate some of these young people to defer college matriculation until after military service, and the linking of commissioning as an officer in the armed forces to receipt of a college degree, leading officer candidates to defer military service until after college.

³Gary R. Nelson, "The Supply and Quality of First-Term Enlistees under the All-Volunteer Force," in *The All-Volunteer Force after a Decade*, 23-51.

3. Does the military propensity-enlistment relationship differ between males and females and between racial/ethnic sub-groups? Here we acknowledge that the armed forces have traditionally recruited within the male labor market, but that the transition from conscription to voluntarism has frequently resulted in an expansion of women's military service.⁴ Nonetheless, military forces are predominantly male, and the female labor force has great potential for further market expansion. Furthermore, the racial/ethnic composition of the armed forces is very different than the racial/ethnic composition of American society at large; therefore, in this report we explore whether or not the racial/ethnic make-up of the armed forces is presaged in the propensity to enlist as expressed by seniors prior to graduation.

This analysis of the propensity-enlistment relationship is of particular relevance to those concerned with military recruitment because military planners have relied heavily on the Youth Attitude Tracking Survey (YATS) as an indicator of propensity. There have been analyses of YATS respondents comparing their plans (as measured in the survey) with their actual enlistment, but it is useful to have a separate and independent source of evidence concerning the propensity-enlistment relationship.⁵

The Several Meanings of "Military Propensity"

The word "propensity" has a number of synonyms, including "tendency," "inclination," and "disposition." But the term "military propensity" (or "enlistment propensity") often broadens the meaning of the word to include not only individuals' interests and desires, but also their plans and

⁴See for example Mady Wechsler Segal, "Women's Military Roles Cross-Nationally," *Sex and Society*, vol. 9 (December 1995): 757-775.

⁵Bruce R. Orvis, Martin T. Gahart, and Alvin K. Ludwig, *Validity and Usefulness of Enlistment Intention Information* (RAND Corporation, 1992).

expectations, with respect to military service.⁶ The term can thus cover a fairly broad range of meanings; indeed, it may be helpful to think of a whole "propensity continuum" ranging from wishes or preferences, at one end, to firm plans, at the other end.

Where would the "propensities" of high school seniors fit on such a continuum? By the time they reach the end of high school, most young people have had ample opportunity to consider alternatives seriously and have explored their options in some detail. Indeed, before graduation many have been accepted into one or more colleges, and others have made at least preliminary arrangements with military recruiters. So the "plans" or "expectations" that individuals report just before high school graduation often reflect mutual commitments firmly in place; and these firm propensities should correlate quite well with future behaviors, whereas expressions of propensity some months or years earlier may yield less accurate predictions.

Methods

Study Design

Monitoring the Future (MtF) is an ongoing study of American high school seniors conducted by the Institute for Social Research at the University of Michigan. The study design has been extensively described elsewhere.⁷ Here we outline only the key features. MtF employs a cohort-sequential research design that involves (a) annual surveys of nationally representative

⁶Beth J. Asch and Bruce R. Orvis, *Recent Recruiting Trends and Their Implications: Preliminary Analysis and Recommendations* (Rand Corporation, 1994).

⁷Jerald G. Bachman, Lloyd D. Johnston, and Patrick M. O'Malley, *The Monitoring the Future Project after Twenty-Two Years: Design and Procedures, MtF Occasional Paper 38* (Ann Arbor, MI: The Institute for Social Research, 1996).

samples of high school seniors, beginning in 1975 and continuing through the present day, and (b) annual Follow-up surveys mailed each year to sub-samples from each class sample in the years following graduation.

A base year sample is drawn each year using a three-stage probability sampling design to select approximately 130 public and private high schools representative of those in the 48 contiguous states. Professional interviewers from the Institute for Social Research supervise survey activities at the school site, usually during regular classroom periods in March, April, or May. All respondents are asked to fill out one of six forms of a 45-minute, paper and pencil, self administered questionnaire. Student response rates vary from school to school, between 75% and 100%, producing sample sizes of roughly 17,000 seniors each year. Because of changes in the questionnaire design between 1975 and 1976, we report data from classes beginning in 1976.

From 1976 to 1996, MtF obtained base year questionnaires from a total of 351,080 respondents, 309,959 of whom responded to a question regarding their prospects for military service. Weights are used to adjust for unequal probabilities of selection and for absentees.⁸ Hereafter, all base year data will be presented as weighted cases.

From each senior class, 2,400 seniors are selected for Follow-up, and randomly divided into two groups, each group numbering about 1,200. Members of one group are mailed questionnaires one year after graduation, and every two years thereafter; those in the other group are mailed questionnaires two years after graduation, and every two years thereafter. Thus,

⁸Because students who are absent from school on the day of survey administration are excluded, we adjust for the effects of their omission. Respondents are asked how many days of school they have missed in the previous four weeks. Based on this variable, individuals are assigned to different strata as a function of how often they are absent. Actual base year participants in each stratum are weighted to represent all students in their stratum, including absentees on the particular date of administration.

individual participants are surveyed on a two-year cycle, beginning either one or two years after graduation, for a total of up to seven Follow-ups. Respondents are paid \$5 (\$10, beginning with the class of 1991) for each Follow-up participation. The Follow-up samples are drawn so as to be largely self-weighting; however because the primary focus of the study is on drug use, users of illicit drugs are over-sampled for Follow-ups (by a factor of three to one). Weights are used in all analyses to adjust for the differential selection probabilities. In this report, we use base-year data from the classes of 1984 through 1991, with Follow-ups through 1995. All respondents from the classes of 1976 through 1989, and one-half of the class of 1990, have had the opportunity to respond to three Follow-ups; the class of 1991 has had the opportunity to respond to only two Follow-ups.

From 1977 through the present, MtF has sent Follow-up questionnaires to sub-samples totaling 36,831 weighted cases from the classes of 1976 to 1991. Within those samples, 33,241 weighted cases provided a response to the propensity measures during their senior year.⁹

Measures

In the senior year questionnaire, respondents are asked a series of questions about their plans after high school. One question is, "*How likely is it that you will do each of the following things after high school?*" "*Serve in the armed forces*" and "*Graduate from college (four-year program)*" are two of the activities listed, and all respondents are asked to choose from the following alternatives: "*Definitely won't*"; "*Probably won't*"; "*Probably will*"; and "*Definitely*

⁹Our weighting procedures produce weighted numbers of cases that are somewhat smaller than the actual numbers of Follow-up cases (there were 39,761 actual Follow-up respondents, of which 35,693 answered the base year propensity question).

will". Additionally, all senior year respondents are asked, "*Suppose you could do just what you'd like and nothing stood in your way. How many of the following things would you WANT to do?*" Serve in the armed forces is one of the alternatives that respondents may choose.

Follow-up questionnaire respondents are asked, "*Now we'd like to know about some things you are doing now, or have done, or plan to do. Please look at each activity listed below, and mark the circle which shows how likely you are to do EACH.*" "*Serve on active duty in the armed forces*", "*Attend a four-year college*", and "*Graduate from a four-year college program*" are three of the activities listed, and all respondents are asked to choose from the following alternatives: "*I'm doing this now*"; "*I have done this*"; "*Definitely won't*"; "*Probably won't*"; "*Probably will*"; and "*Definitely will*". Additionally, we ask all Follow-up respondents, "*What is the HIGHEST degree you have earned?*" and follow that question with a list of degrees.¹⁰

An individual who has entered the military has crossed a definitive life threshold. Entry into the military is thus, for our purposes, a unambiguous act; an individual has either entered the military or not. For any single Follow-up, coding the observations was straightforward. Individuals were coded as "Accession" if they responded either "*I'm doing this now*"; or "*I have done this*" to the service in the military item. Otherwise they were coded as "No Accession" or "Missing". Because we are interested in following individuals across three Follow-ups, individual data on entry into the armed forces collected in Follow-ups were coded cumulatively. Any individual who reported military accession was coded as such. For reasons of logical consistency, all subsequent Follow-ups for that individual were also coded as "Accession", even in cases of non-response. If data were missing for early Follow-ups and then, in a later Follow-up, a

¹⁰ MtF Follow-up questionnaires contain several other questions regarding service in the military. See Appendix 1 for a discussion of those questions and the measure we use here

respondent indicated neither current nor past military service, again for reasons of logical consistency, that respondent was coded as "No Accession" for all prior Follow-ups.¹¹

Adjustments for Panel Non-Response

Data reported here from Follow-up collections were adjusted for panel non-response. Response rates for Follow-ups ranged from 83% for Follow-up 1 respondents (one to two years after high school) to between 60% and 75% for Follow-up 3 respondents (five to six years after high school). Seniors who said that they "*Definitely Will*" enter the armed forces failed to respond at a far higher rate than those of lower propensity. For class years 1976 through 1991, 37.6% of the seniors with the highest military propensity failed to return the Follow-up 1 questionnaire, compared to only 21.4% of their lower propensity classmates. By Follow-up 2 42.4% of the highest propensity seniors failed to respond, compared to only 25.2% of the lower

¹¹Some respondents, 368 weighted cases, gave us response patterns that were logically contradictory according to our coding scheme. In Follow-up 1 or Follow-up 2 these respondents reported that they either were presently in the military or had been in the military. We coded those responses as "accession". Then, in a later Follow-up, these same respondents reported that they Definitely won't, Probably won't, Probably will, or Definitely will enter the military in the future. We coded all these responses as "no accession". There are several possible explanations for such a contradictory pattern of responses. Respondents could just be making a mistake while filling out the survey, or respondents could be answering this question set randomly. We do not find either of these explanations compelling. Our experience with Follow-up responses to our questionnaires has been that respondents work carefully and thoughtfully on the items. There is no particular reason to believe that respondents treat these items differently. We believe that the wording and presentation of the question itself provides a more plausible explanation for these relatively rare instances of contradictory responses. The question begins by asking respondents about activities "you are doing now, or have done, or plan to do", then it ends by asking respondents how "likely you are to do EACH." It is entirely plausible to us that a respondent who had been in the military at one time could later indicate that he "definitely won't" serve (again) or chose from one of the other probabilistic alternatives. Thus, we decided to keep to our cumulative coding rules and to re-code these cases as "accession" for all response points after their initial report of entry into the military.

propensity seniors. Accession into the military, as we discuss below, usually happens soon after high school for those with the highest propensity to enter. Accession into the military also increases the normal difficulties of tracking panel members into subsequent Follow-ups. We concluded that we would underestimate rates of military service if we simply reported findings for those who participated through all three Follow-ups, without making adjustments for panel attrition. Thus, we decided to impute responses to individuals with missing data.

We utilized a variation of the "hot deck" imputation procedure to impute missing values.¹² Cases with three complete observations were arranged in the "deck" according to their pattern of responses to our question on military accession in successive Follow-ups. Each respondent with missing military accession data in any of the Follow-ups was matched on senior year propensity, sex, race, and class year with other respondents who provided valid data on military accession at all three Follow-ups. Cases with missing values for military accession were "stacked" in a random order into the set of matched "donor" cases, and their value for military accession was imputed from their nearest neighbor in the stack.

Of the 33,241 weighted cases used in the analyses, 16,619 (49.9%) had observations in all three Follow-ups. An additional 4,535 (13.6%) weighted cases with some missing data were assigned a value based on their prior or subsequent responses according to the cumulative coding process described above. One or more values were imputed to the remaining 12,077 (36.3%) via the "hot-deck" imputation procedure.¹³

¹² See Roderick Little and Donald Rubin, *Statistical Analysis With Missing Data* (New York: John Wiley and Sons, 1987), esp. pp. 65-71.

¹³ 10 cases with missing data were assigned "No Accession" because there were no matching cases with similar patterns of response, senior year propensity, sex, race, and class year.

To check the effect of imputation on our findings we cross-tabulated senior year propensity with subsequent accession in two ways: one way was restricted to just those cases with three valid observations, and the other way used our total adjusted sample. The two cross-tabulations yielded accession rates from each propensity group that were remarkably similar. In other words, our data imputation did not have significant effects on our central claim (discussed below) that base year propensity to enlist is powerfully related to subsequent accession. However, our adjustments did retain the full proportion of cases with high propensity to enlist. Thus, the effects of our data adjustments were to improve the accuracy of our estimates of overall rates of accession.¹⁴

In addition to examining the three questions posed above, we were interested in looking at changes in enlistment behavior over time. Because there was a fair amount of year to year fluctuation in both propensity and actual accession, we initially combined data from sets of four adjacent class years as follows: 1976-1979, 1980-1983, 1984-1987, and 1988-1991. Later, we concluded that grouping the data into two eight-year pools (1976-1983 and 1984-1991) captured the most important changes. In the present report, we focus primarily on the latter group--classes of 1984 to 1991.¹⁵

Results

Propensity to Enlist

Each year from 1976 to 1996, as Figure 1 shows, only small groups of seniors said that they "*definitely will*" enter the armed forces after high school. Because of the small size of these

¹⁴ The appropriate tables and discussion can be found in Appendix 2.

¹⁵ For a fuller discussion of changes over time see Appendix 3.

groups, small shifts in their numbers have a proportionately very large effect. Thus, from 1976 to 1986 the percentage of all seniors who said they "*definitely will*" enter rose from 4.7% to 7.4%, an increase of 64%. After 1986, the percentage of all seniors who expressed the highest propensity to enlist gradually fell back down to 4.7% in 1996. From 1983 onward there has been a fairly steady increase in the percentage of seniors expecting that they "*definitely won't*" enter the military, and corresponding declines in the percentages in the less certain categories-- "*probably won't*" and "*probably will*".

Sex Differences in Propensity

There are large and significant sex differences in propensity to enlist in the military. As Figures 2 and 3 show, even as the military self consciously changes its sex composition, male and female high school seniors' propensity to enlist still reflects a traditional sex stereotypical definition of who serves in the military. In any given year reported here, males were from 3 to 5 times more likely than females to report that they "*definitely will*" enter the military service. Three-quarters or more of the females in these reported that they "*definitely won't*" serve in the military.

Racial Ethnic Differences in Propensity

In general the findings in this report are based on large numbers of cases, and show a good deal of consistency across years. Accordingly, it has not been necessary to focus much attention on matters of statistical significance or confidence intervals around estimates. When dealing with racial/ethnic sub-groups on a year-to-year basis, it is important to add a word of caution. The

numbers of cases for minority sub-groups are relatively small, our data are derived from school-based samples which produces some clustering effects, and the clustering by school is more severe for racial/ethnic sub-groups. The result is that confidence intervals around single percentages for Black and Hispanic sub-groups can be substantially larger than would be the case with simple random samples of equal size; in other words, year-to-year findings for these sub-groups (particularly for Hispanics) are likely to show some increased degree of "bumpiness" due to the larger levels of random sampling error. Fortunately, any single school participates for only two years in the study (half rotate out each year), so that the random errors due to school clustering tend to cancel each other over the long run. Accordingly, our interpretation of the present trend data focuses primarily on sub-group differences which show a good deal of consistency across time, rather than attributing much importance to data for any single year.

Seniors who participate in the Monitoring the Future study are asked to identify their racial or ethnic group. Whites made up 76.4% of the total samples. Blacks accounted for 12.1% of the samples, while Hispanics were 5.4% of the total. Figure 4 shows the results by year for each of the racial or ethnic sub-groups by sex. The pattern of differences between sexes reported above for the total samples held true within each of racial/ethnic sub-groups reported here. Since we have already noted large differences in propensity between the sexes, all results will be reported here separately by sex.

Between sub-groups there are sizable differences in the pattern of propensity. From 1976 to 1990, black males were more likely to respond that they "*definitely will*" join the armed forces than either Hispanics males or whites males. The proportion of black male seniors who reported the highest expectations of military service rose from 8.2% in 1977 to 18.8% in 1989. In

contrast, the largest proportion of white males who reported they "*definitely will*" serve in the military was in 1986, and that proportion was only 6.3% of the white male sample for that year. The proportion of Hispanic males who reported that they had a firm intention to join the military in any given year was always higher than whites, and always lower than blacks in any year except 1977 and 1991. In 1991 there was an abrupt increase in the proportion of black males reporting they "*definitely won't*" serve--a shift which did not appear among other males that year. In effect, black male seniors suddenly "caught up" with their white counterparts in terms of proportions ruling out military service, for reasons discussed below.

Among females, blacks were more likely than Hispanics, who were in turn more likely than whites, to report they "*definitely will*" serve in the military. Indeed, for several years in 1980's the percentage of black females who said they were certain of military service was higher than the percentage of white males certain of service. The proportions of white females who said they "*definitely won't*" serve have remained about 75% since 1981, and have climbed as high as 85% in the early nineties. Between one-half and three quarters of all black females ruled out military service in the years reported here. The proportion of Hispanic females who said they "*definitely won't*" serve always fell between the corresponding proportions of white or black females.

In 1991, a significant proportion of America's armed forces deployed into the Persian Gulf, expelled Iraqi troops from Kuwait, and invaded Iraq itself. MtF collected data soon after that conflict ended. Black seniors of both sexes apparently reacted strongly to that event. The percentage of black males who reported that they "*definitely will*" enter the military dropped from 25.3% in 1990 to 10.3% in 1991. The percentage of black males who reported that they

"*definitely won't*" enter the military rose from 33.3% in 1990 to 51.8% in 1991. While more black seniors, both male and female, than either Hispanics or whites still report they "*definitely will*" enter the military, the percentage declined precipitously in 1991 and has not shown any signs of recovery to the pre-1991 levels. Among Hispanic seniors the decline was less sharp for males, from 12.8% reporting they "*definitely will*" enter the military in 1991 to 9.4% making that same report in 1991, than for females, from 3.5% reporting they "*definitely will*" enter in 1991 to 0.9% in 1992.

Desire to Enlist and Propensity to Enlist

As Figure 5 shows, more seniors reported they would want to enter the armed forces than either "*definitely will*" or "*probably will*" enter. Adding together the seniors who reported they "*definitely will*" and "*probably will*" enter yields totals that are nearly identical with the proportions who responded that they "*would want*" to enter the military.¹⁶

Over the years, as Figure 6 shows, men were substantially more likely than women to respond that they wanted to serve in the military. Among females however, more said they "*would like to*" serve in the military than said they "*will*" or "*probably will*" serve (combined). Among males, the *likelihood* of service was almost always greater than or equal to the *desire* for military service.

A comparison of seniors' desire to enter the military and their likelihood of military entry also reveals differences between racial/ethnic groups. Figure 8 shows a consistently close match between desires and likelihood of entry among white males. From 1979 until 1987, slightly more

¹⁶In all the figures that follow comparing seniors who would want to enter with their likelihood of entry, we sum the two highest propensity groups and label it *likely to enter*.

white males thought it likely they would enter the military than wanted to enter the armed forces. From 1988 until the latest data collection, 1996, slightly more white males wanted to enter the military than thought it likely that they would do so. In contrast, among black (Figure 7) and Hispanic (Figure 9) males, the proportion who thought it likely that they would enter the military ranged from slightly to moderately larger in every class year than the proportion who said they would want to enter the military. Among black males in 1991, there was a drop in desire to enter that parallels the drop in likelihood of entry that occurred that year. Among white females (Figure 11) the proportion who wanted to enter the armed forces was almost twice the size of the proportion who thought it likely that they would enter the military. Among black females (Figure 10), there were only slight and inconsistent differences between likelihood of entry and desire to enter. The proportion of Hispanic females (Figure 12) who wanted to enter the military tended to be slightly larger than the proportion who thought it likely to enter the armed services.

To examine the differences among racial/ethnic groups in more detail, Table 1 cross tabulates expectations and desires (from 1976-1996) and presents the cell percentages for each group. The tables are grouped by sex, then by racial/ethnic group. A higher percentage of black males (3.4%) than whites males (1.2%) or Hispanic males (2.2%) reported that they did not want to enter the military but were highly likely to do so. More importantly, substantially higher proportions of black males (14.7%) than white (7.1%) or Hispanic males (8.7%) reported that they wanted to enter the military and were highly likely to do so. The racial/ethnic differences among males are replicated among females, as can be seen in the table. The correlations between desire and expectations are, as we would expect, strong and positive.

Relationships Between Propensity and Actual Military Enlistment by Sex

Table 2 and Figure 13 display recent male and female high school seniors' enlistment propensities, and how these are related to actual accession into the armed forces during the first five or six years after high school graduation. Beginning with the data on propensity, shown in the left-hand column of Table 2 (and displayed also as the width of the bars in Figure 13), we observe that nearly one quarter of the young men expected that they would either "*definitely*" (12 percent) or "*probably*" (12 percent) serve, just over one quarter (28 percent) thought they "*probably*" would not, and the remaining half (48 percent) thought they "*definitely*" would not. Among the young women, the proportions who expected to serve were a great deal lower, with only 2.5 percent "definite" and 4.6 percent "probable."

For each level of enlistment propensity, the rates of actual enlistment are shown in the right-hand portion of Table 2 (and indicated also by the bar heights in Figure 13). Shown separately are the proportions who had entered the service by the time of the first Follow-up (one or two years after high school), the second Follow-up (three or four years after high school), and the third Follow-up (five or six years after high school). It should be noted that once an individual reported military service, we employed a cumulative coding approach that continued to treat that individual as having served even if the individual later failed to participate in later Follow-ups or reported no longer being in the armed forces.

We begin our inspection of the propensity-enlistment relationships with three broad observations based on Table 2 and Figure 13. First, expectations late in the senior year of high

school were strongly predictive of actual entrance into military service. Second, the majority of enlistment occurred within the first year or two after high school; but even in the fifth and sixth years there were some further accessions. Third, even after taking account of the large sex differences in propensity, there remain large sex differences in rates of enlistment; at each level of propensity, females were roughly half as likely as males actually to enlist. Thus we report findings for males and females separately.

Males

Among young men who late in their senior year expected "*definitely*" to serve in the armed forces, 61 percent had done so within a year or two, and by five or six years after high school the total had reached 70 percent. Accession was less than half as likely among those who expected "*probably*" to serve, beginning at 20 percent by the first Follow-up and reaching 29 percent by the third. Among the large majority of young men who had not expected to serve, accession rates were very low; however, it is of interest to note that among those men who "*definitely*" expected not to serve, the majority of all accession occurred after the first Follow-up -- perhaps after many of them had tried college.

What proportion of total male enlistment consisted of those who as high school seniors expected to serve? The answer can be seen in Figure 13, and also can be derived from the "percentages of total samples" data shown in parentheses in Table 2. At the time of the first Follow-up, more than three quarters of all male enlistees were drawn from the ranks of those who expected to serve $((2.44 + 7.18) \div 12.22)$, and more than half from those who expected "*definitely*" to serve $(7.18 \div 12.22)$. By the third Follow-up these proportions had declined only

slightly (to about two-thirds, and just under half, respectively). It is sometimes suggested that low propensity individuals account for a near majority of all accessions, simply because there are so many more low propensity than high propensity individuals.¹⁷ The present results, based on the very firm propensity data available at the end of high school, indicate that this is not the case among young men in recent years.

Females

Among young women who "definitely" expected to serve, 36 percent had done so by the first Follow-up, and that proportion rose only to 39 percent by the third. Accession rates were dramatically lower among those who only "probably" expected to serve, starting at 5 percent and rising to 7 percent. Rates were even lower among those who expected not to serve. Nevertheless, and in contrast to the findings for men noted above, among women the majority of all accessions consisted of those who in high school expected that they would not serve.

Relationships Between Propensity and Military Enlistment by Racial/Ethnic Group

Table 3 displays recent high school seniors' (class years 1984-1991) enlistment propensities and their subsequent accession into the armed forces after five or six years by sex and by racial/ethnic group. Like Table 2, this table displays the data on senior year propensity in the left-hand column for each racial/ethnic sub-group; the rates of actual enlistment for each propensity group are shown in the right hand column. As noted above, males enter the military at

¹⁷Beth J. Asch and Bruce R. Orvis, *Recent Recruiting Trends and Their Implications: Preliminary Analysis and Recommendations* (Rand Corporation, 1994), 8.

far higher rates than females. Above and beyond the sex differences, there are notable differences between racial/ethnic sub-groups.

Almost three-quarters (74.7%) of the white males who said they "*definitely will*" enter the armed forces during their senior year had in fact done so in the first five or six years thereafter. Over two-thirds (68.2%) of the Hispanic males from the highest propensity category also had entered by five or six years after high school. Black males had the highest proportion of respondents from any racial/ethnic sub-group who said they "*definitely will*" enter the military after high school (24.6%). However, the rate of actual entry of black males of high propensity, while still rather impressive, was the lowest, 56%, among the males analyzed by racial/ethnic sub-group. Among the lower senior year propensity groups, black males had higher rates of accession than their white or Hispanic male counterparts. Overall, over one-quarter (27.1%) of black male respondents had entered the military in the first five or six years after high school, while just one in six whites and nearly one in five Hispanic males had entered.

Among the female respondents who had said they "*definitely will*" enter the armed forces after high school, 49% of Hispanic women actually did so, compared with 46% of the white women, and 31% of black women. Again like black males, black women from the lower propensity groups entered the armed forces at higher rates than their white or Hispanic female counterparts. Overall, 8.4% of black females reported military accession, while less than 4% of the white or Hispanic women entered the military.

Contrasts with College Expectations and Outcomes

Table 4 and Figure 14 display college plans, and their relationship with actual college entrance. Here again we observe that expectations at the end of high school were strongly predictive of post-high school behaviors, and among those in the "*definitely will*" categories entrance occurred within the first year or two after high school. In other important ways, however, the patterns for college contrast sharply with those for military service, as can be seen most clearly by comparing Figures 13 and 14.

The first contrast we note is the most dramatic; the proportions who planned to complete a four-year college program, as well as the proportions who actually entered college, are a great deal larger than the corresponding proportions for military service. Second, whereas there were very large sex differences in military plans and outcomes, the college data are quite similar for young men and women in terms of (a) proportions who expected to complete a four-year degree (over 20 percent "*probably*" and over 40 percent "*definitely*"), (b) proportions who actually entered college (about half of all, and 80 percent of the "*definitely*" subgroup), and (c) proportions who actually completed a four-year degree by five or six years after high school (among females, over one-quarter of all, and nearly half of the "*definitely*" subgroup; among males, these proportions were slightly lower). Third, whereas many who entered the military had not (as high school seniors) expected to do so, the large majority of all college entrants (about 70 percent), and the overwhelming majority of graduates (about 80 percent), consisted of those who as seniors expected "*definitely*" to complete college.

Changes in Expectation-Outcome Association

Table 5 displays measures of association between expectations and outcomes for military service and for college attendance, contrasting the graduating classes of 1984-91 with the classes of 1976-83. In addition to the familiar Pearson product-moment correlation, the table displays the eta statistic for each of the relationships.¹⁸

Military Enlistment

Focusing first on the military propensity-enlistment data from the classes of 1984-91 (upper right-hand portion of Table 5), we see that the correlations for females are distinctly lower than those for males. We also see that the correlations cumulated across five to six years are no higher than those based on the first year or two; indeed, among females, the correlations cumulated across the longer time interval are actually lower, indicating a slightly poorer "fit" between plans and outcomes. These results are fully consistent with the data shown in Table 2 and Figure 13, which indicate that the later accessions among females are drawn primarily from among those who expected not to serve.

¹⁸ The Pearson correlation coefficient assesses the degree of *linear* association. The eta statistic indicates the strength of the relationship regardless of its linearity; accordingly, the difference between the Pearson correlation and the eta is an indicator of the extent to which the relationship is non-linear. As can be seen in Figure 13 (and others) the association between propensity and accession is monotonic, but not completely linear (because there is less of a "jump" in the first interval, between the first two categories, compared to the "jumps" associated with the other two intervals). Nevertheless, the association is mostly linear, and the Pearson product-moment correlation coefficient captures the essence of the association. Given its familiarity to most readers, we find it a useful summary statistic.

Next we consider whether the propensity-enlistment correlations have shifted across time, by contrasting the classes of 1976-83 (upper left-hand portion of Table 5) with the classes of 1984-91 (right-hand portion). Among males, the correlations are consistently stronger for the later time interval, indicating that in recent years young men's enlistment behaviors have become more closely linked with their plans and expectations at the end of high school. Among females, on the other hand, the differences across time are small and generally in the opposite direction.

College Entrance

The correlations between college plans and entrance (shown in the lower portion of Table 5) are high, although the comparison of the two time intervals indicates the matches between plans and outcomes were not quite as close for the more recent graduating classes (1984-91) as for the earlier ones (1976-83). The relationships for college plans-entrance differ from those for military propensity-enlistment in several ways. First, there are no important sex differences in correlations; none of the coefficients for females is lower than the corresponding coefficient for males, and none is more than .03 higher. Second, the data cumulated across three or more years after graduation show slightly stronger correlations than those based on only the first year or two, indicating that the "fit" between college plans and entrance improved slightly over time. Third, and more important, among females the military propensity-enlistment correlations are far weaker than the correlations between college plans and actual entrance.

The most important comparisons, however, involve males in recent years, and consist of similarities rather than differences. Among males in the classes of 1984-91, the correlation between military propensity and enlistment is fully as strong as the correlation between college

plans and entrance during the first year or two after high school. By five or six years after high school a small difference emerged, because the "fit" with respect to college plans-entrance improved slightly whereas the "fit" for military propensity-enlistment remained the same. Nevertheless, whether we look at just the first year or two after graduation, or consider data cumulated across five or six years, the primary finding is that young men's expectations at the end of high school predicted their entrance into military service just about as accurately as their entrance into college.

Discussion

Main Findings

By the time young people reach the final months of high school, the point at which they are surveyed by the Monitoring the Future project, they have had ample opportunity to explore their options in some detail, and many have already worked out firm commitments with college or military recruiters. Most individuals who definitely expected to complete a four-year college program had in fact entered college within a few years of high school graduation, and within five or six years many had completed degrees. Similarly, most young men who "*definitely*" expected to enter military service had in fact done so within a few years of high school graduation. However, the rates of actual enlistment for high propensity young women were distinctly lower.

The fact that rates of military entrance among highest propensity young men were nearly equal to rates of college entrance by highest propensity individuals (men or women) is particularly impressive when we take account of the fact that, among young men in general, rates of military

entrance were far lower (about one-third as frequent) compared with college entrance. In other words, going to college may represent the "default option" for the majority of young adults; if so, it is not surprising that many of the individuals who were initially less certain about going to college eventually did attend -- sometimes after a delay of several years (as illustrated in Figure 14). Military entrance, on the other hand, was more narrowly limited to those who "definitely" expected to enter, and most of them did so within the first year or two after high school (as can be seen in Figure 14).

Differences from Earlier Research Findings

It has long been known that young people's plans and expectations about military service bear at least some positive relationship to their actual enlistment.¹⁹ The present findings, however, show a dramatically stronger relationship than would have been expected based on previous research. For example, analyses of data from the Youth Attitudes Tracking Surveys (YATS) of 1976-80, later matched with records of actual accessions, showed the following: among young men who made unaided mention of military service when asked about their future plans (these amounted to only five percent of the total sample), 37 percent had entered the armed forces by four to eight years later; among those who when asked said they definitely or probably would enter (23 percent of the total sample), only 15 percent actually did.²⁰ Later analyses of the

¹⁹David R. Segal and Jerald G. Bachman, "The Military as an Educational and Training Institution," *Youth and Society* 10 (1978): 127-134; Bruce R. Orvis, Martin T. Gahart, and Alvin K. Ludwig, *Validity and Usefulness of Enlistment Intention Information* (RAND Corporation, 1992); Veronica Nieva, Michael J. Wilson, Dwayne G. Norris, James B. Greenlees, Janice Laurence, and Rod McCloy, *Enlistment Intentions and Behaviors: A Youth and Parental Model* (Alexandria: U.S. Army Research Institute for the Behavioral and Social Sciences, 1996).

²⁰Beth J. Asch and Bruce R. Orvis, *Recent Recruiting Trends and Their Implications: Preliminary Analysis and Recommendations*.

YATS samples in 1984-93 have shown similar findings.²¹ Our own early analysis of 1975-76 MtF data showed that only one third of young men expecting "probably" or "definitely" to serve had done so a year after graduation. In contrast, the present findings based on MtF data (see Table 1) show that among male seniors with the highest enlistment propensity (the 12 percent of the total sample who expected "definitely" to serve), fully 70 percent reported they actually were doing or had done this by five or six years after high school.

What might account for these dramatic differences, especially between the present MtF data and the YATS data? We consider below three possible explanations: First, the present analyses looked separately at the two positive propensity categories, whereas earlier analyses combined them. Second, the MtF sample seems to be focused on just the right target group at just the right time, thereby yielding propensity measures that are much "firmer" than is the case for many individuals in the YATS samples. Third, there are a number of other methodological differences between the studies. We consider each of these explanations in turn.

The present analyses distinguished between those expecting "definitely" to serve in the armed forces and those expecting "probably" to do so. Young men in the highest propensity category were three times as likely as those in the next highest category to enlist within a year or two after high school, and more than twice as likely to have done so within five or six years; among young women the distinctions are even greater (see Table 2 and Figure 13). Incidentally, the distinctions in outcomes between the "probably will" and "definitely will" categories are far less pronounced with respect to college plans (see Table 4 and Figure 14). Taking a second look at the MtF data with the "probably will" and "definitely will" categories of military propensity

²¹(Bruce Orvis, personal communication, September, 1996).

combined, we found that only 34 percent of all young men in this larger category had enlisted within a year or two after high school -- a figure virtually identical to that found in the analysis of MtF men in 1975-76, which had combined the two positive propensity categories; we also found that by five or six years after high school a total of 44 percent had enlisted (which is almost three times as high as the 15 percent reported in the YATS analyses).²²

Why does such a large difference remain between the MtF and YATS results, even when the top two propensity categories are combined for the MtF data? We think that much of the answer -- perhaps all of it -- lies in the differences between the kinds of samples used in the two studies. The YATS samples consisted of males between ages 16 and 21, surveyed in the Spring and Fall of each year, omitting anyone beyond the second year of college, and also omitting any who had already entered military service. At the bottom end of this age band, we suspect many young men have only unformed or weakly formed military propensities -- they simply have not yet had to come to grips with firming up their plans for the years after high school. Also, some of these youngest individuals later drop out of high school; this makes them quite unattractive to the armed services, thus restricting the relationship between their propensities and any actual enlistment. With respect to the upper end of the YATS age band, men aged 20 and 21, it appears that those most likely to enter military service had already done so, and thus were defined out of the YATS samples, leaving in the sample only those with relatively low propensity and very low actual likelihood of entrance. It thus appears that the full age band of the YATS samples, while perhaps very well suited for some analysis, market research, and policy purposes, is not ideally suited for demonstrating how strong the propensity-enlistment relationship can be. The MtF

²²David R. Segal and Jerald G. Bachman, "The Military as an Educational and Training Institution," *Youth and Society* 10 (1978) 127-134.

samples, in contrast, consist of high school seniors surveyed in the Spring of each year, just a few weeks before graduation. These are just the kinds of people the armed forces seek to recruit, and the period prior to graduation is just the time when young men and women are likely to be exploring options and making arrangements with recruiters. In sum, the MtF samples seem far more precisely targeted than the YATS samples, at least in terms of reaching prime candidates for service at a point in time when their plans and expectations are likely to have been clearly and firmly developed. (We should add, of course, that for many other purposes, such as the exploration of military plans and attitudes prior to the point of firm expectations, the YATS samples may be much better targeted than the MtF samples.)

There remain other methodological differences between the YATS data and the MtF data. The baseline propensity data for MtF were taken from self-completed questionnaires group-administered in schools, whereas the YATS propensity data came from individually-administered telephone surveys. The Follow-up information for the YATS analyses was derived from administrative records, whereas the MtF data were self-reports from mail Follow-up surveys. Although we cannot be certain, we do not consider it likely that the two methods for collecting baseline propensity information differ greatly in their ability to generate valid measures of the underlying "true" propensities. The MtF Follow-up surveys, however, were subject to panel attrition, which prompted us to employ the imputation procedures discussed in the Methods section. But the imputation did not exaggerate the rates of enlistment among those in the highest propensity category; in fact, the rates reported here based on full data (incorporating cases requiring imputation) were slightly lower than rates among only those individuals with no missing data, as we have reported in detail in Appendix 2. One other methodological issue worth noting is

the possibility that some of our Follow-up respondents distorted their self-reports of military service in order to correspond more closely with their senior-year propensities; it seems quite unlikely to us that such distortions occurred frequently enough to have contributed significantly to the findings reported here.

On balance, we think these other methodological differences between the two studies are relatively unimportant, in terms of the findings discussed here. We believe that the dramatically higher correspondence between propensity and enlistment shown in the present analysis results from the finer-grained distinctions in propensity which we employed in the present analyses, and from the fact that the MtF surveys of high school seniors sample individuals who have largely made up their minds one way or the other about military service.

Changes over Time in the Propensity-Enlistment Relationship

During the period covered by the MtF surveys there have been shifts in the proportions of high school seniors expecting to enter military service, as well as in proportions planning for and entering college.²³ College opportunities and costs, civilian employment opportunities, and the armed forces' resource needs and priorities all affect seniors' desires and expectations, as well as their actual outcomes. It thus seems useful to consider how these factors might influence the relationship between military propensity and actual enlistment.

The all-volunteer armed forces compete with others in the market for qualified high school graduates. Colleges offer ease of entrance and financial incentives in order to attract the most promising students. Young people examine employment opportunities in business and industry,

²³See also Segal and Bachman, "The Military as an Educational and Training Institution".

assessing the opportunities for well-paid and stable long-term employment; and businesses in turn offer employment packages designed to attract qualified applicants.

The armed forces are not without resources in this competition. Like any business, the military offers a package of pay and benefits, and it employs a staff of recruiters to sell that package to the most promising young people. Military pay and benefit packages have changed over the years, as have the resources, organization, and management of the recruiting staff. Such changes have been influenced, of course, by the decision to shrink the size of the armed forces since the end of the Cold War. All such changes in military requirements and recruiting efforts may be linked with changes in both propensity and actual enlistment.²⁴

In the light of all these changes, it seemed to us quite possible that the strength of relationship between military propensity and actual enlistment might have changed appreciably over the course of the past two decades. In fact, however, we found that propensity-enlistment correlations shifted only modestly across time, although we did note the correlation for males has grown stronger in recent years (see Table 5). We also noted earlier that findings based on the YATS have been quite consistent across time. This overall consistency, replicated in two independent studies, leaves us fairly confident in predicting that the propensity-enlistment relationship is likely to remain strong in future years. In other words, we believe the present findings have a good deal of generality.

Perhaps one important reason for finding consistency in propensity-enlistment relationships across time, in spite of fluctuations in military requirements, is that the "propensity"

²⁴David R. Segal and Jerald G. Bachman, "Change in the All-Volunteer Force: Reflections in Youth Attitudes," in *Marching Towards the 21st Century: Military Manpower and Recruiting*, ed. Mark J. Eitelberg and Stephan L. Mehay (Westport: Greenwood Press, 1994), 149-166.

measure examined here reflects expectations (and often firm arrangements) in place at the end of high school. Such expectations are correlated strongly, but far from perfectly, with preferences. The MtF questionnaires, immediately after asking seniors' expectations about college, military service, and other future possibilities, ask a more hypothetical question: "Suppose you could do just what you'd like and nothing stood in your way. How many of the following things would want to do?" College and military service are included among the options. Although answers to the two kinds of questions generally match, there are notable exceptions. We have consistently found that more young women would want to serve than expect ("probably" or "definitely") to serve, whereas the reverse was true to a small extent among young men until recently. From 1991 onward, however, the proportions of male seniors saying they would want to serve have been just about identical with the proportions expecting that they would.²⁵ The recent decline in expectations, relative to preferences, may reflect realistic reactions to the recent downsizing; whether it will produce any overall increase or decrease in the propensity-enlistment relationship remains to be seen when future Follow-up data become available.

Differences Linked to Sex

Young women are less likely than young men to say that they want to enter military service, and less likely to expect to enter. It is hardly surprising, therefore, that women are also less likely actually to enlist. But there are interesting sex differences in how wishes, expectations, and actual outcomes match -- or mismatch. As noted above, the proportions of young men expecting to serve ("definitely" plus "probably") have been roughly equal to the proportions who

²⁵Segal and Bachman, "Change in the All-Volunteer Force," in *Marching*, p.153.

would want to serve, whereas among young women the proportions expecting to serve are substantially lower than the proportions who indicate they would like to do so. Further, among women the rates of actual entrance are far lower than expectations, and that is much less the case among young men (see Table 2 and Figure 13).

Clearly, military service is less "typical" or "normative" (at least in the statistical sense) for young women than for young men. What is less clear is whether or not that somehow accounts for the lack of close match between the women's wishes, expectations, and outcomes. We suspect that the norm of masculinity in the military contributed to this difference, both because of perceived limitations in opportunities for women in the military, and because of familial resistance to women joining the armed forces.

Differences linked to racial/ethnic group

The MtF surveys reveal that higher proportions of blacks enter the military than whites or Hispanics, regardless of sex. The MtF surveys also found that larger proportions of blacks thought it highly likely that they would enter the armed forces than any other racial/ethnic subgroup. Nevertheless, this group of high propensity blacks actually entered the military at a lower rate than their high propensity white or Hispanic counterparts. One possible explanation for the lower rate of entry among black males might be the apparent reluctance of black men to enter the military. That is, more black men expressed a likelihood of entry than expressed a desire to enter. However, we examined the cross-tabulation between desire and propensity, and although a larger proportion of black men than whites or Hispanics were "mismatched" (no desire but high

propensity), the differences are unimpressive. Black females did not exhibit a large difference between expectations and desires.

One possible factor that may account for at least part of the lower entry rates among the highest propensity black males and females is failure to meet military service entry requirements. Black applicants, on average, score lower than white applicants on most of the special aptitude tests in the Armed Services Vocational Aptitude Battery, with the result that smaller proportions of black applicants are accepted.²⁶ Whether this alone is sufficient to account for the lower entry rates among high propensity black respondents cannot be determined from available data in the Monitoring the Future project, but it may be possible to estimate that from other data sources.

Summary, Conclusions, and Implications

The present findings show that the military propensities of most young people are firmly formed by the end of high school, especially among men. Substantial majorities of those young men expecting "definitely" to serve actually do so, usually enlisting within the first year or two after graduation. We believe these findings have several implications for future research.

First, our present findings, coupled with our view of military propensity as a continuum ranging from vague wishes to firm expectations, lead us to suggest that future studies involving broader age ranges (such as provided by the YATS samples) should examine the propensity-enlistment relationship in subgroups stratified by age -- or, better yet, by educational attainment. As we argued earlier in this paper, there are reasons to expect that the relationship may be

²⁶ For a discussion of this point, and of race and gender issues more generally, see David Armor, "Race and Gender in the U.S. Military," *Armed Forces and Society* 23, 1 (Fall, 1996) pp. 7-27.

strongest when individuals are nearing the end of high school and are making, or already have made, their decisions and arrangements concerning what they will do next.

Second, the present detailed examination of MtF panel data linking senior year propensity to later enlistment suggests additional uses for the large annual MtF cross-sectional samples of high school seniors. One such use could be an annual monitoring of propensity, as well as its correlates. This could provide early indicators of upward and/or downward shifts in desires and expectations concerning military service, and might also provide indicators of changes in other factors found to influence propensity. That in turn suggests the value of a thorough analysis of the potential correlates of propensity, which is already underway.

Finally, we note that the present findings suggest the usefulness of research on other differences between high and low propensity high school seniors, because such research can forecast the actual makeup of the all-volunteer force in the future. Thus, for example, analyses of MtF samples a decade ago provided some evidence of ideological self-selection: "high school seniors who expect to serve in the military are more pro-military than those who do not, and those who anticipate military careers are the most pro-military."²⁷ Such analyses gain in relevance now that the present research has established the very substantial extent to which those expecting to serve in the military go on to do so.

²⁷Jerald G. Bachman, Lee Sigelman, and Greg Diamond, "Self-Selection, Socialization, and Distinctive Military Values," *Armed Forces and Society* 13 (1987) pp. 169-187.

APPENDIX 1

Measures

In addition to asking follow-up respondents to tell us whether or not they have been in the military, MtF asks two other questions that could indicate that a respondent has been or is currently a member of the armed forces. We cross tabulated all first follow-up to these questions to assure ourselves that our primary indicator of military service was the best available. First, respondents are asked to tell us about their employment status during the first full week of March. The question reads, Which BEST describes your primary job that week?, or if the respondent was unemployed, Which BEST describes the last job you held? Military service is one of the response options. The fit between our primary indicator of enlistment and respondents' reports of their job in the first week of March is remarkably close. One to two years out of high school, fully 95% of the respondents who reported they "have done" military service or were "doing (it) now" also reported that the military was their current or last job. It is, of course, entirely possible that someone who entered the military right after high school could have left the military service early and secured other employment.

Second, respondents are asked, Which BEST describes the kind of setting in which you did (do) this work? Military service is again one of the response categories. Of those Follow-up 1 respondents (one to two years after high school) who reported they "have done" military service or were "doing (it) now", 83% reported that the military was their job setting during the first full week in March of the year they were surveyed. It seems likely to us that respondents who are civilian employees of the DOD might well report that they work for the military even if they are not serving on active duty. Thus, those who have no intention of joining the armed forces may

still work in a military setting. We concluded from these two cross tabulations that our primary measure of enlistment was the best available measure in the MtF survey.

APPENDIX 2

Data Adjustments

One of the central findings reported here is that there is a powerful connection between senior year propensity to enter the military and subsequent accession decisions over the next five or six years. We also posited that the differential rate of panel attrition between respondents with the highest expectations of military entry and the other respondents from the lower propensity groups would negatively affect the accuracy of our overall estimate of actual entry into the armed forces. Tables 6-9 allow us to gauge the affects of our data adjustments on both the central finding and on the estimate of actual accession into the military in the MtF samples. These tables show that while the adjustment procedures improve the accuracy of our estimates of accession, the improved accuracy is not the simply the product over-inflating the connection between senior year propensity and subsequent accession.

Table 6 breaks down the adjusted follow-up data set we use in this report into its three component parts: 1) the number of cases with observations in all three Follow-ups, 2) the cases with any missing data that were transformed for reasons of logical consistency, and 3) the cases with any missing data that were assigned one or more imputed values. As the table indicates, 49.9% of our sampled respondents gave us observations at all three follow-ups, 13.6% of our respondents had one or more missing observations which were "forced" to take on values for logical reasons, and 36.3% of the weighted cases contain one or more imputed values.

Table 7 shows cross-tabulations between seniors' propensity to enter the military and their actual entry behavior by the fifth or sixth year after high school for our total adjusted sample (Part

A). Part A is the sum of three component parts: 1) the 48.6% of the weighted cases for which we have observations at all three Follow-ups (Part B), 2) the 13.74% of the weighted cases that had one or more missing observations for which we assigned (forced) values for the sake of logical consistency (Part C), and 3) the 37.87% of the weighted cases for which we imputed one or more missing values (Part D).

Note the changes in rates of accession (the row percentages) for each of the BY propensity groups between Part A and Part B. In the sample of cases with three Follow-up observations (Part B), 66.04% of the "Definitely Will" seniors later reported accession. In the total adjusted sample (Part A), 64.97% of the "Definitely Will" seniors reported accession. Among those who said at BY that they "Definitely Won't" enter the armed forces, the adjustment process modestly increased the rate of entry from 2.11% to 3.3%. Among those who said at BY that they "Probably Won't" enter the armed forces, the adjustment process increased the rate of entry from 5.52% to 8.2%. Finally, among those who said at BY that they "Probably Will" enter the armed forces, the adjustment process increased the rate of entry from 18.4% to 23.5%. The slight decline in rate of entry among the "Definitely Will" coupled with the modest increases in rate of entry among the rest of the seniors confirms for us that the adjustment procedures did not unduly distort the results on which we base our central finding. Further, note that the proportional contribution of each of the BY propensity groups to the total number of accessions (the Col Pct) changes only slightly. Finally, the very close similarity in the measures of association between the Part A and Part B also indicates that the adjustment process did little to fundamentally change the character of our central finding.

The more important result of our adjustment procedures was to produce large changes in the size and more modest, but equally as significant, changes in the relative proportions of respondents from each of the BY propensity groups. Combined, these changes improve the accuracy of our overall estimate of accession. Table 8 compares the percentages of respondents in each of the BY propensity groups for Parts A and B of Table 7 and the total BY samples for the class years 1976-1991. In terms of the proportions of BY propensity groups, the composition of our total adjusted sample is very similar to the composition of our BY samples.

The change in composition of the sample results in an increase (compare the Accession columns of Part A and Part B in Table 7) in the estimate of accession. First, note that 33% (total accessions from Part B ÷ total accessions in Part A) of the estimate comes from the component part of the sample that includes only cases with three observations (Part B). A further 31% of the estimate comes by adding those cases from Part C of Table 7. Part C represents those cases in which we forced missing data in one or more follow-ups to take on a value because of information about military accession that the respondent provided us in another follow-up. Due to our cumulative coding of military entry, any case in the Accession column of Part C had to have reported accession in at least one of their early follow-ups. The final one-third of our estimate of overall accessions comes from Part D, cases with one or more missing observations imputed. Note that the rates of accession imputed "Definitely Will" and "Probably Will" propensity groups are actually lower than the rates in the total adjusted sample.

We speculated in the text that many of the high propensity respondents may well have joined the military and attrited from our study. Part C of Table 7 offers evidence that supports that speculation. Note in particular that over three-quarters of the "Definitely Will" respondents at

one time reported accession and then later were missing from the study. Note also that the rates of accession are higher in all BY propensity groups, indicating when an individual enters the military the chances of obtaining follow-up information decrease.

We can make a very rough comparison of the estimates of the percentage of high school seniors' total accessions over six years with the actual number of accessions between 1980 and 1991. Table 9 reports the number of non-prior service accessions, the number of high school graduates and calculates the percentage of graduates who enter the military. The total adjusted samples collected by MtF indicate that 9.9% of high school seniors entered the military from 1-6 years after high school. The figures in Table 9 indicate that about 11.2% did so.²⁸ Granted that there are some difficulties implicit in comparing the calculations in Table 9 with our estimates, we still conclude that our estimates of accession based on the total adjusted sample are substantially better than estimates derived from only those cases that provided us with three observations.

²⁸The figures on Non-Prior Service accessions were provided with the kind assistance of Major Dana Lindsley from the Secretary of Defense's Office of Accession Policy. The figures on high school graduates are taken from the National Center for Education Statistics website: www.ed.gov/NCES/pubs/D95/dtab098.html.

APPENDIX 3

Changes in the Propensity-Enlistment Relationship over Time

Has the character of the propensity-enlistment relationship changed over time? To answer that question this appendix reports findings from senior year and follow-up data collections for the entire set of class cohorts, 1976-1996. Because of year to year fluctuations in both senior year propensity and actual accession, we grouped data from the entire sample into sets of four adjacent class years as follows: 1976-1979, 1980-1983, 1984-1987, and 1988-1991. We examined rates of accession for both males and females across the four class year groups. Second, we looked for changes in the correlations between propensity and enlistment for both males and females across the four class year groups. Finally, we examined the timing of accession, and we looked to see whether or not there were differences over time in the proportions of accession within the first or second year after high school. Below we consider each of these relationships in turn.

Among the males who expected "*definitely*" to serve, rates of accession were high. As we reported in the main body of the text, over two-thirds of male seniors who said they "*definitely*" would enter the military had done so by five or six years after high school. An examination of the highest propensity group of males across time reveals only small fluctuations in their rate of accession. Table 10 (class years 1976-1979) shows that 63% of the "*definitely will*" males enlisted within a year or two after high school, and by five or six years after high school, 69% had enlisted. For the class years 1980-1983, Table 11 shows that 59% of the "*definitely will*" males had entered the military within a year or two after high school, and by five or six years

after high school, 74% had enlisted. Table 12 shows that 62% of the highest propensity males from class years 1984-1987 had entered the military within the first two years after high school, and 72% had entered by the fifth or sixth year after high school. For the class years 1988-1991, Table 12 shows that 60% of the "*definitely will*" males had entered the military within a year or two after high school, and by five or six years after high school, 67% had enlisted.

Among males who expressed the lowest propensity to serve during their senior year, the "*definitely won't*" group, the pattern of very low rates of entry holds, with minor variations, across all four class year groups. The accession rate for the "*definitely won't*" group of males in the first one or two years after high school ranged from a high of 3.3% in 1976-1979 (Table 10) to a low of 2.0% in the most recent years of the sample, 1988-1991 (Table 13). By five to six years after high school, the range of accession rates among males expanded slightly, with the highest rate, 7.0%, in 1976-1979 (Table 10) and the lowest accession rate, 4.8%, in 1988-1991 (Table 13).

Even taking into account the large sex differences in propensity to serve, females had significantly lower rates of enlistment at each level of propensity. Among the females who expected "*definitely*" to serve, Table 10 (class years 1976-1979) shows that 28% had done so within a year or two after high school, and by five or six years after high school, 34% had enlisted. In the class years 1980-1983 a change occurred among females with the highest propensity to serve. Table 11 shows that 52% of the "*definitely will*" females had entered the military within a year or two after high school, and by five or six years after high school, 56% had

enlisted.²⁹ Table 12 shows that 38% of the highest propensity females from class years 1984-1987 had entered the military within the first two years after high school, and 40% had entered by the fifth or sixth year after high school. For the class years 1988-1991, Table 12 shows that 33% of the "*definitely will*" females had entered the military within a year or two after high school, and by five or six years after high school, 38% had enlisted.

Among females who expressed the lowest propensity to serve during their senior year, the "*definitely won't*" group, a pattern of extremely low rates of entry holds, with minor variations, across all four adjacent class year groups. In 1976-1979 (Table 10), females who said that they "*definitely won't*" enter the armed forces had an accession rate of less than 0.5% by the first or second year after high school, and by the most recent class years, 1988-1991 (Table 13), the rate was still well under 1% (0.7%) accessions. By five to six years after high school, the accession rates for the lowest propensity females was 1.6% in 1976-1979 (Table 10) and remained very stable across the remaining years presented here: 1.8% in 1980-1983 (Table 11), 1.9% in 1984-1987 (Table 12), and 1.7% in 1988-1991 (Table 13).

Table 14 summarizes the correlations (found separately on Tables 10-13) between expectations and actual accessions. Table 14 is limited to Pearson product-moment correlations showing linear associations. Tables 10-13 include the Pearson coefficients as well as eta coefficients; the latter are somewhat larger than the former, indicating some curvilinearity in the relationship. Here we note that for males the linear relationship between propensity and accession was stronger for later class cohorts, and the significant increase in size of the correlation occurred

²⁹ Observe, however, that only 85 women expressed the highest propensity to serve during their senior year. So while the percentage of that group who actually entered is high in comparison to the earlier class years, the number of individuals involved was still very small.

between class years 1980-1983 and the class years 1984-1987. For females, the correlations between senior year propensity and subsequent enlistment were uniformly lower than their male counterparts, but also were higher among more recent classes than the earliest classes (1976-1979); the significant increase in the correlations occurred earlier among females, between the class years 1976-1979 and the class years 1980-1983.³⁰

Table 15 presents data concerning the timing of actual enlistment after high school, by sex, for each of the class year groupings. For both males and females, and for all class year groupings, the majority of accessions occurred in the first or second year after high school. Among males, 64% of all accessions from the classes of 1976-1979 had occurred by the first or second year after high school; for class years 1988-1991, almost three-quarters of all accessions occurred within one to two years of high school graduation. Among females, 52% of all accessions occurred within two years of high school graduation among members of the classes 1976-1979, and by class years 1988-1991, over 60% of all accessions occurred in the first two years after high school.

The percentage of entrants into the armed forces by three to four years after high school rose steadily over the year groupings among both males and females. Among males from the class years 1976 to 1979, 82% of all accessions occurred by the third or fourth year after high school. By the 1988-1991 class years, 95% of all male accessions had occurred by three to four years after high school. Among females the percentage of entrants by the third or fourth year

³⁰ We also examined each class year group to see if there were significant differences in the correlations between Follow-ups (Follow-up 1 to Follow-up 2, Follow-up 2 to Follow-up 3, and Follow-up 1 to Follow-up 3). Hotelling's t test did not reveal any statistically significant differences between Follow-ups within each four year class grouping for either males or females.

after high school rose from 72% among the class years 1976-1979 to 91% in among the class years 1988-1991.

Figure 1
Trends in Propensity to Enter the Armed Forces Among High School Seniors, 1976-1996
(Total Sample)

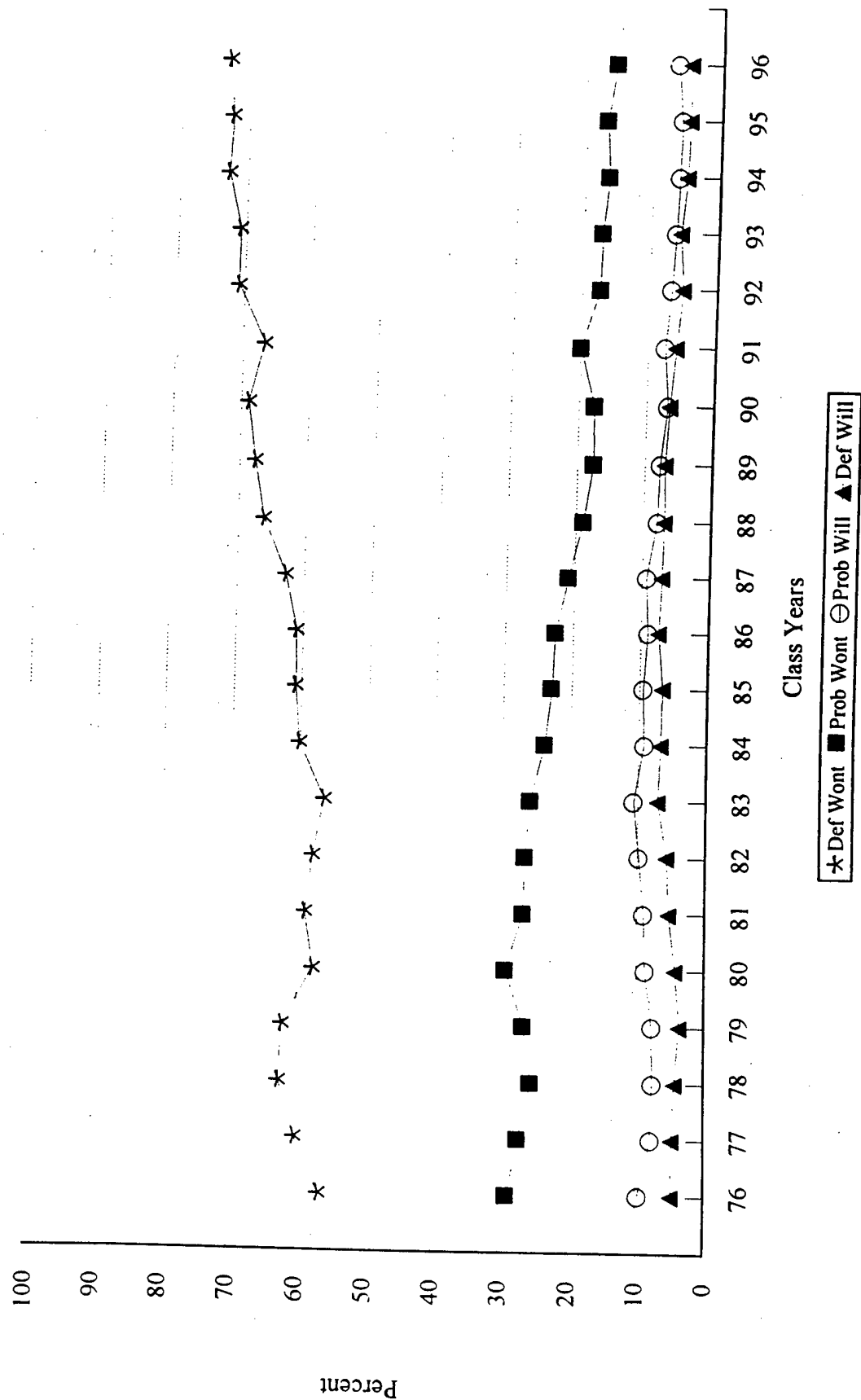


Figure 2
Trends in Propensity to Enter the Armed Forces Among High School Seniors, 1976-1996
(Males)

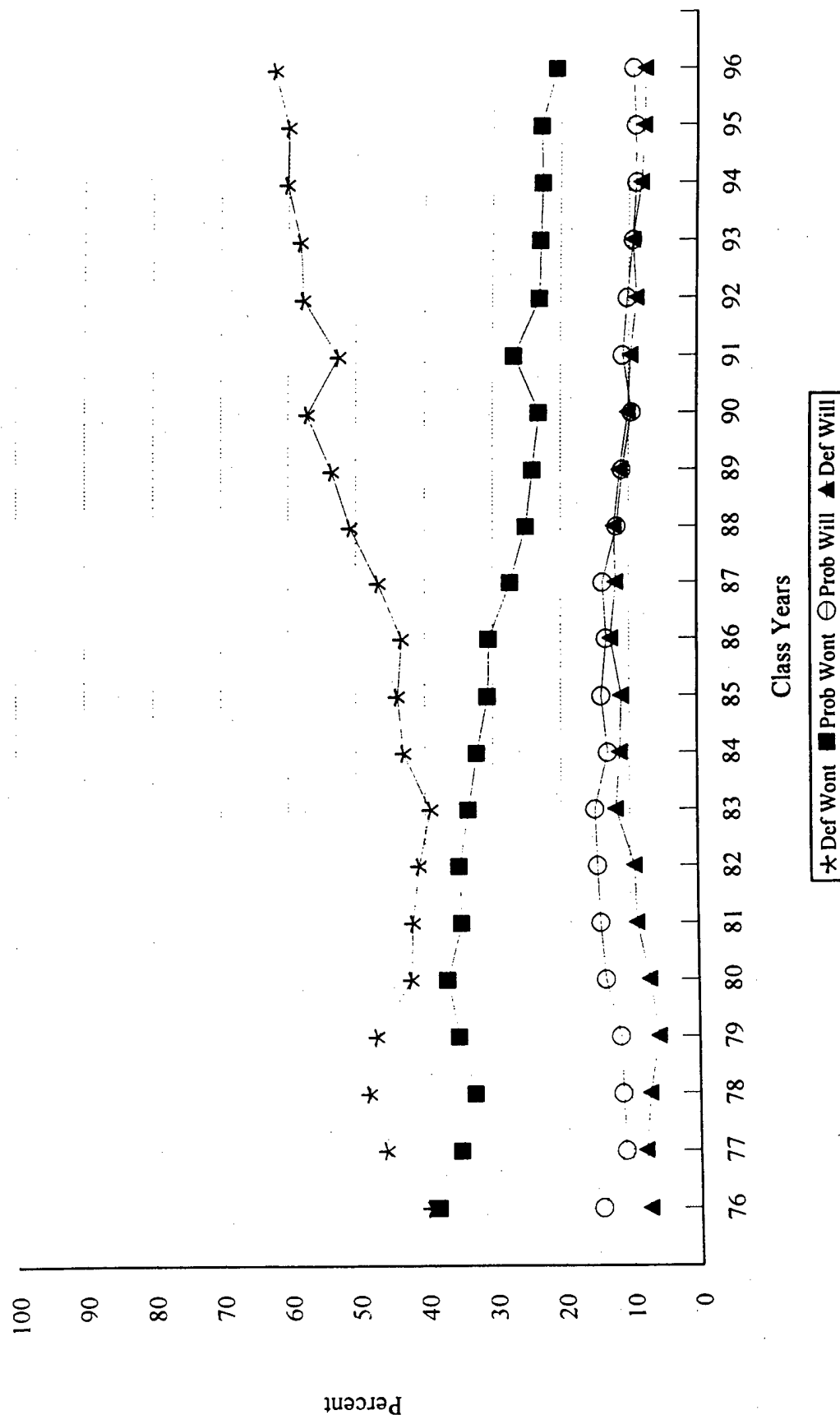


Figure 3
Trends in Propensity to Enter the Armed Forces Among High School Seniors, 1976-1996
(Females)

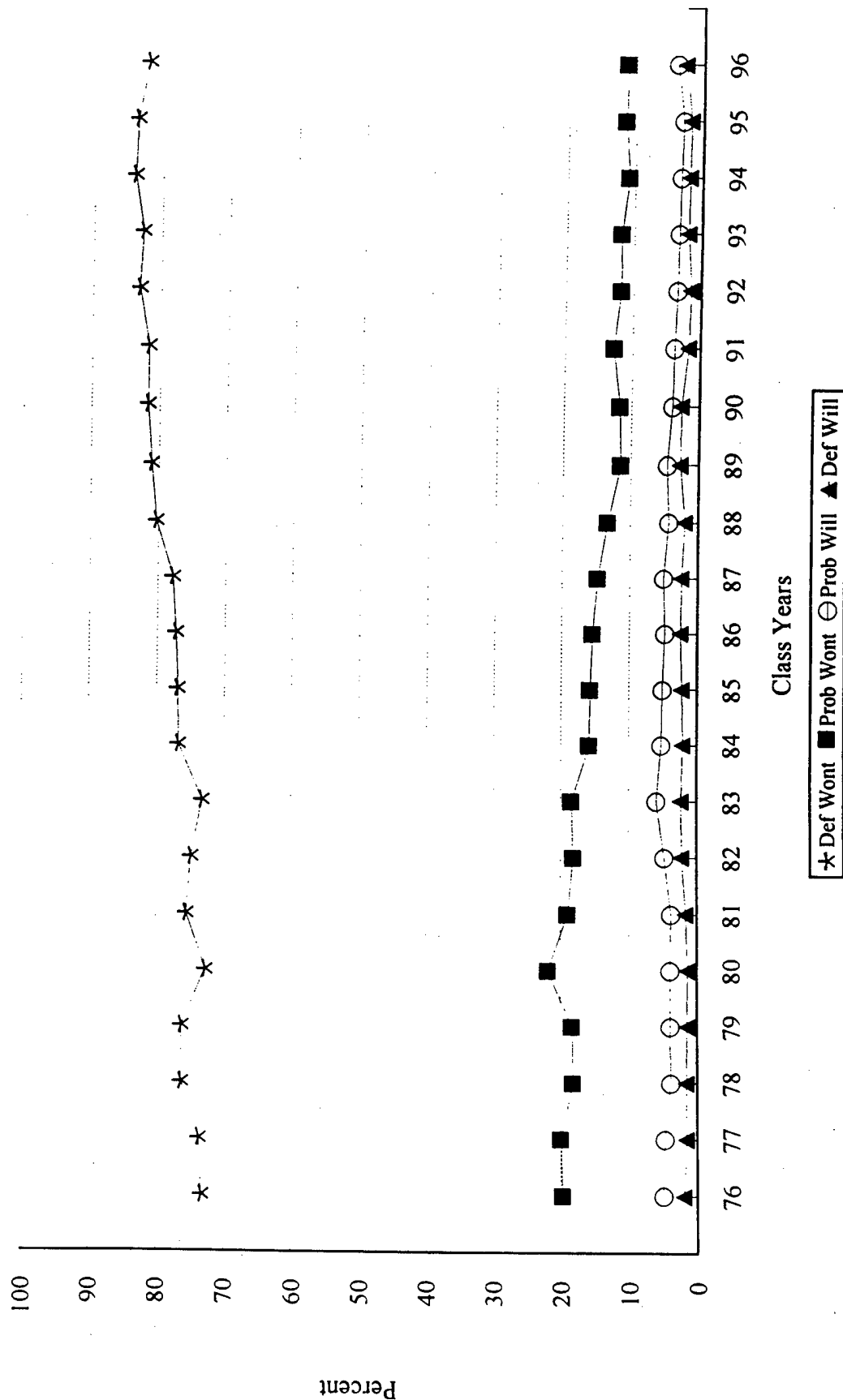
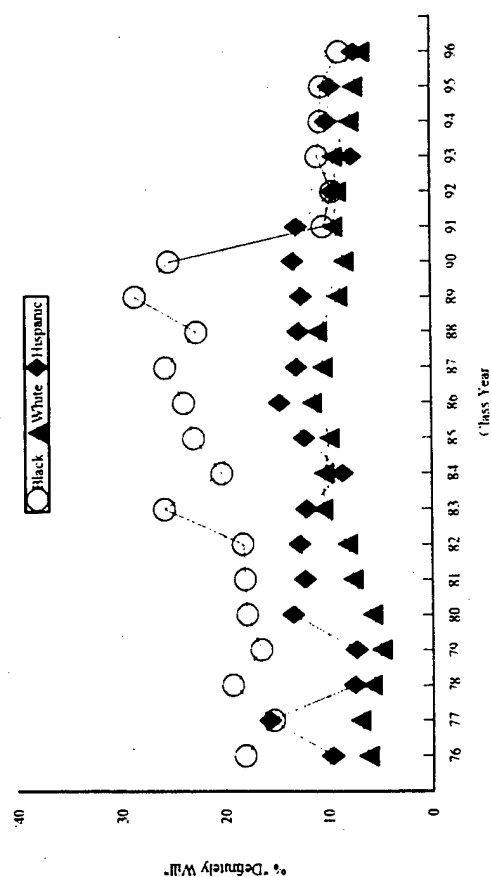


Figure 4

Trends in High and Low Military Propensity, 1976-1996 by racial/ethnic group, for males and females

Males



Females

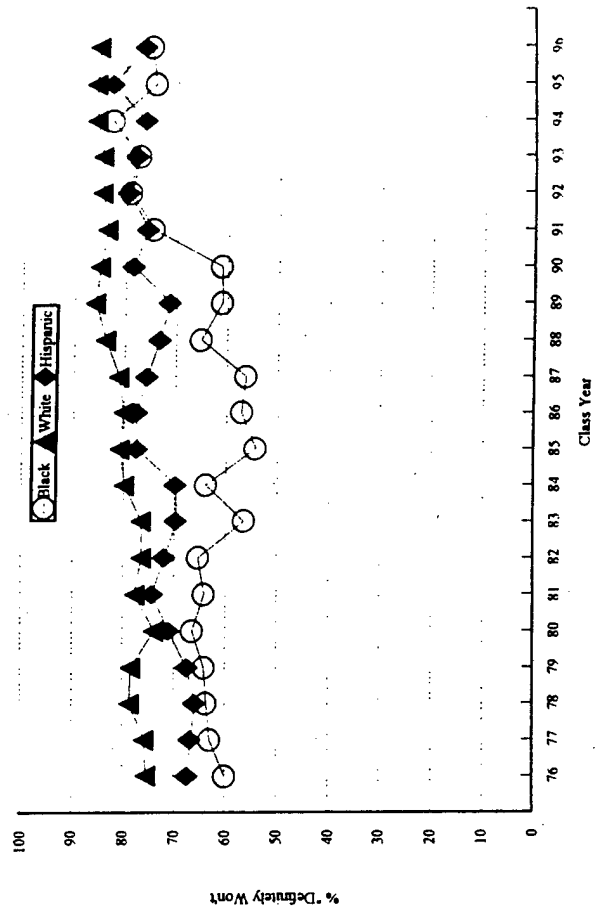
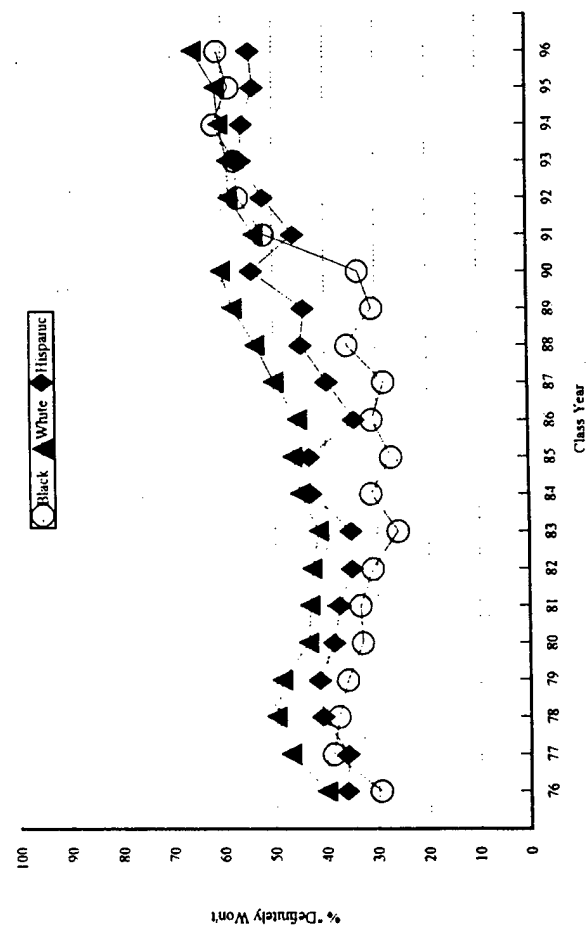
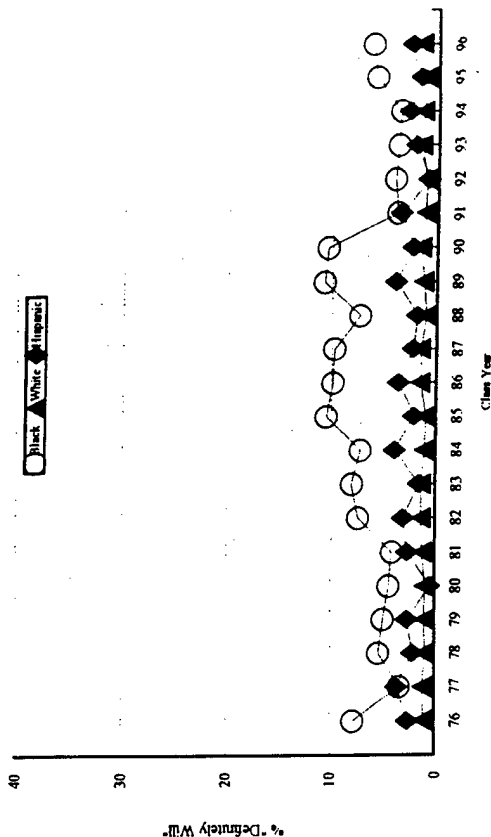


Figure 5
 Comparison of Trends between High School Seniors with High Propensity to Enter the Armed
 Forces and Seniors who "Would Want to Enter" the Armed Forces, 1976-1996
 (Total Samples)

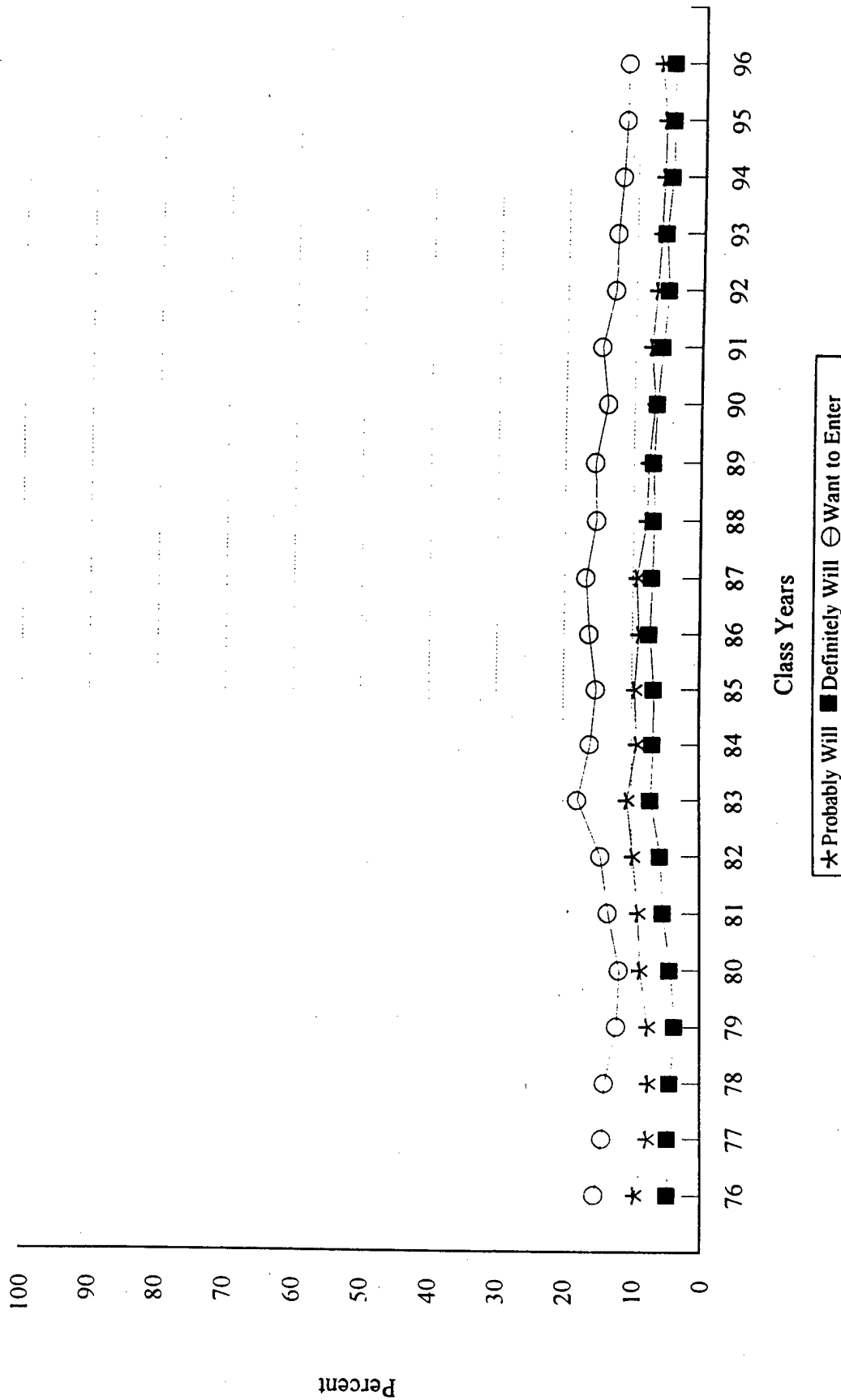


Figure 6
 Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
 "Would Want to Enter" the Armed Forces, 1976-1996
 (Males and Females)

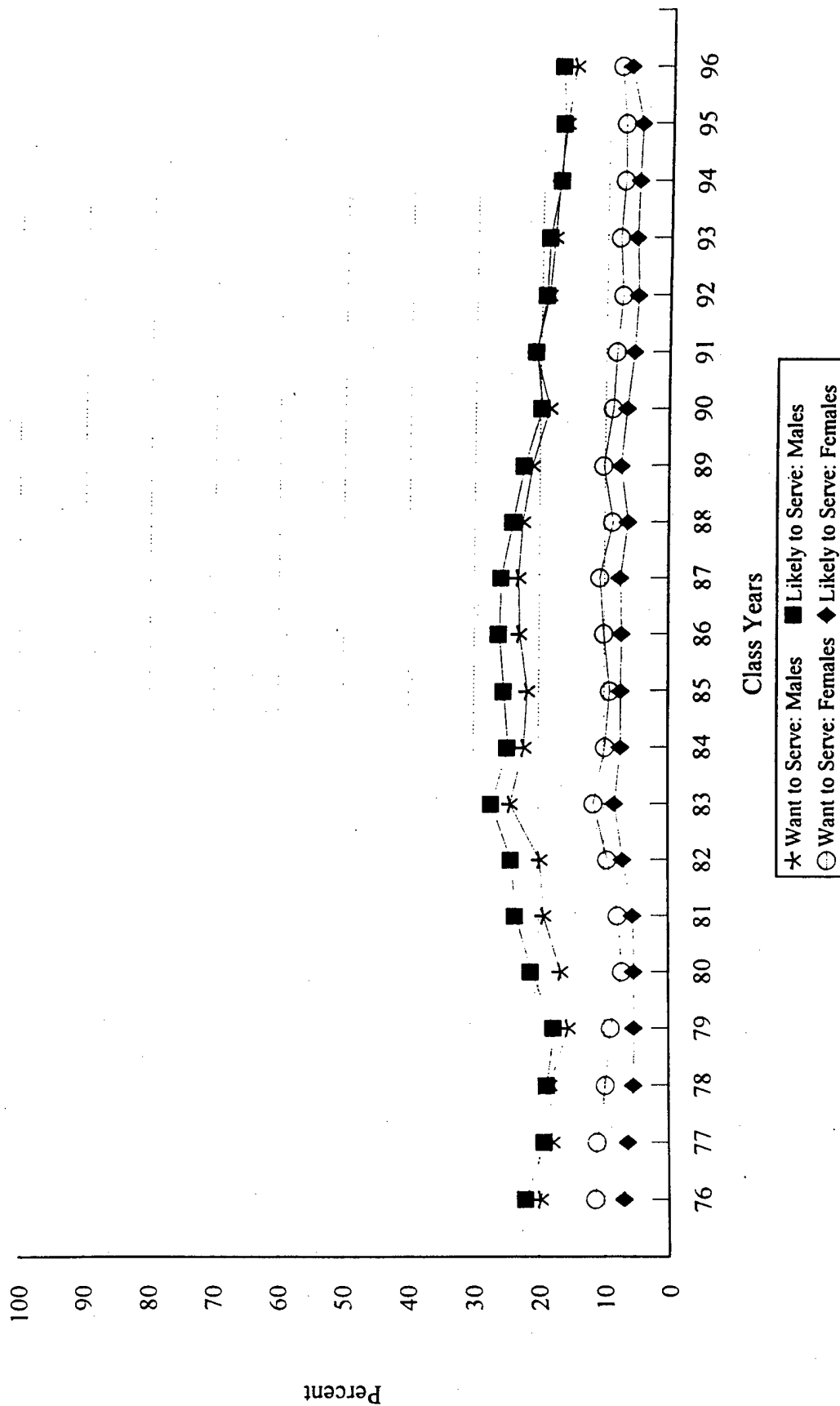


Figure 7
 Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
 "Would Want to Enter" the Armed Forces, 1976-1996
 (Black Males))

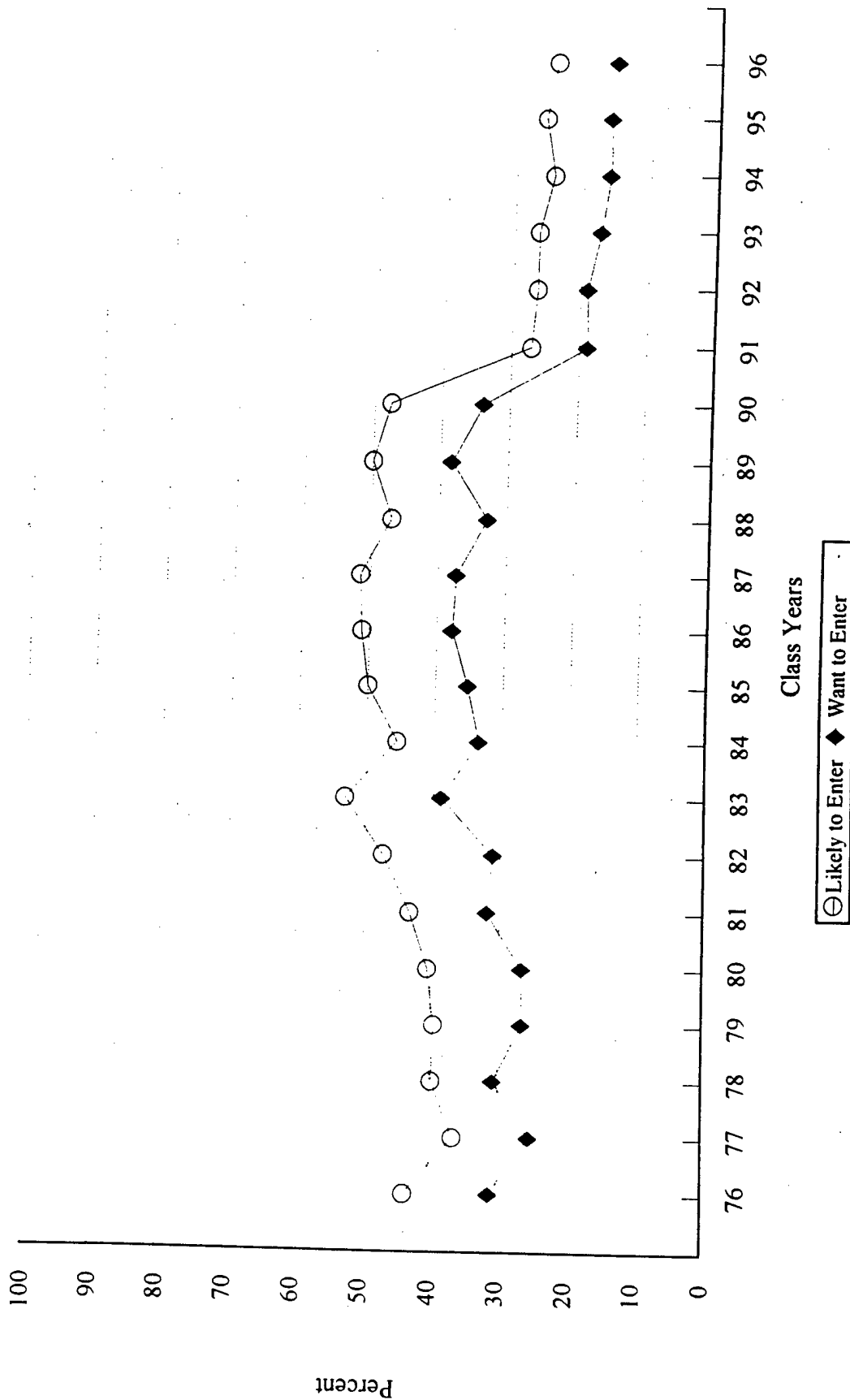


Figure 8

Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
"Would Want to Enter" the Armed Forces, 1976-1996
(White Males))

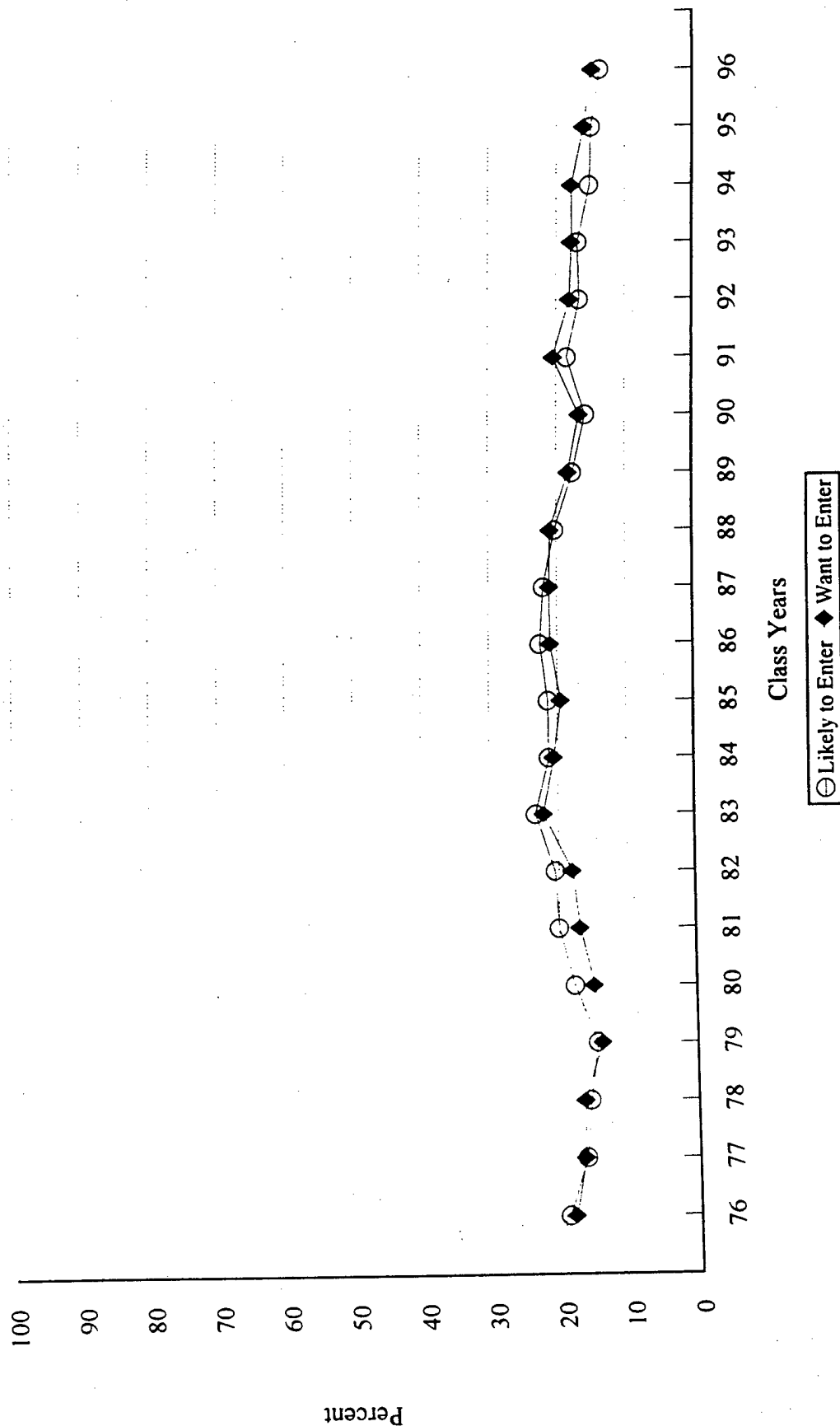


Figure 9

Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
 "Would Want to Enter" the Armed Forces, 1976-1996
 (Hispanic Males)

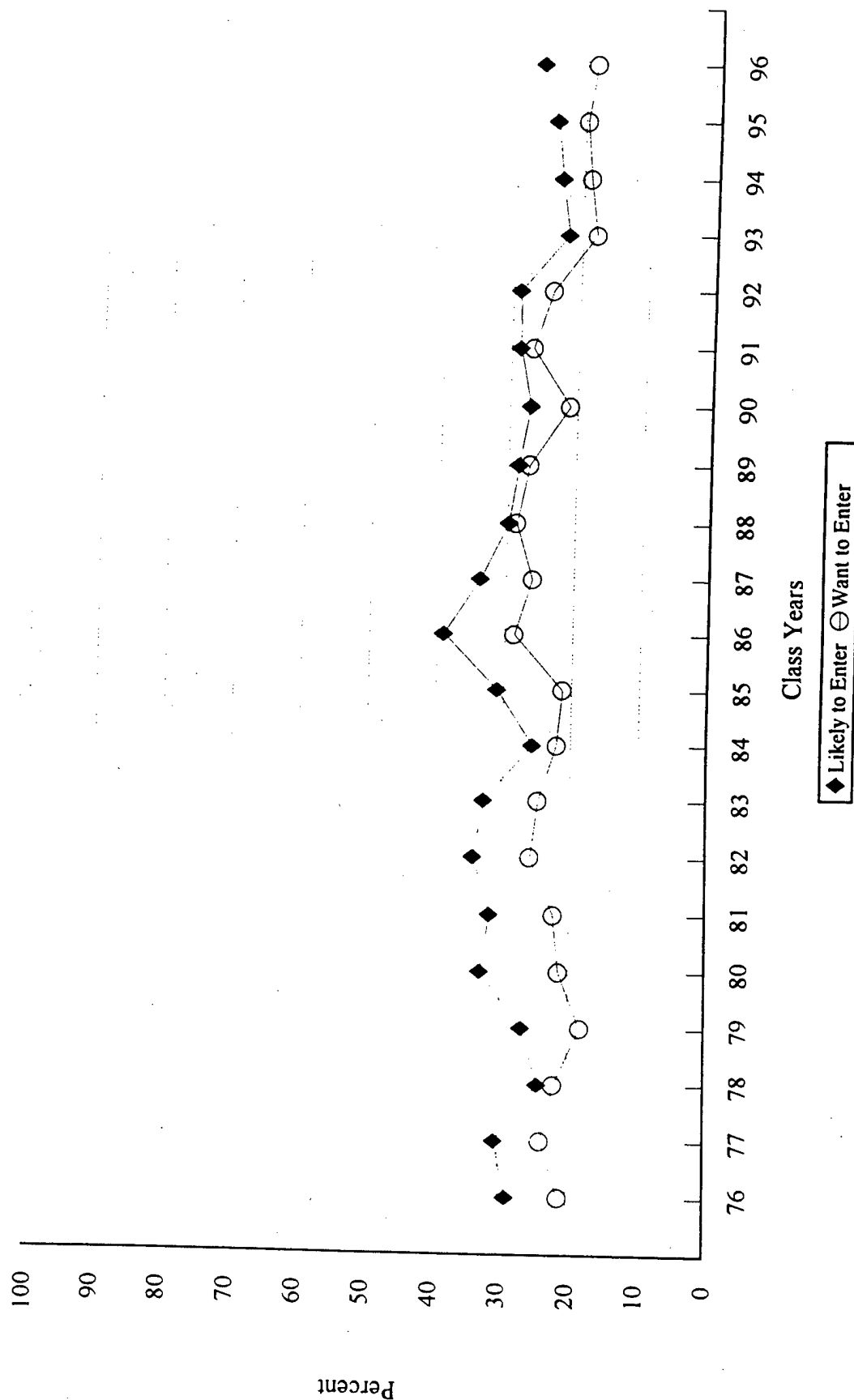


Figure 10
 Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
 "Would Want to Enter" the Armed Forces, 1976-1996
 (Black Females))

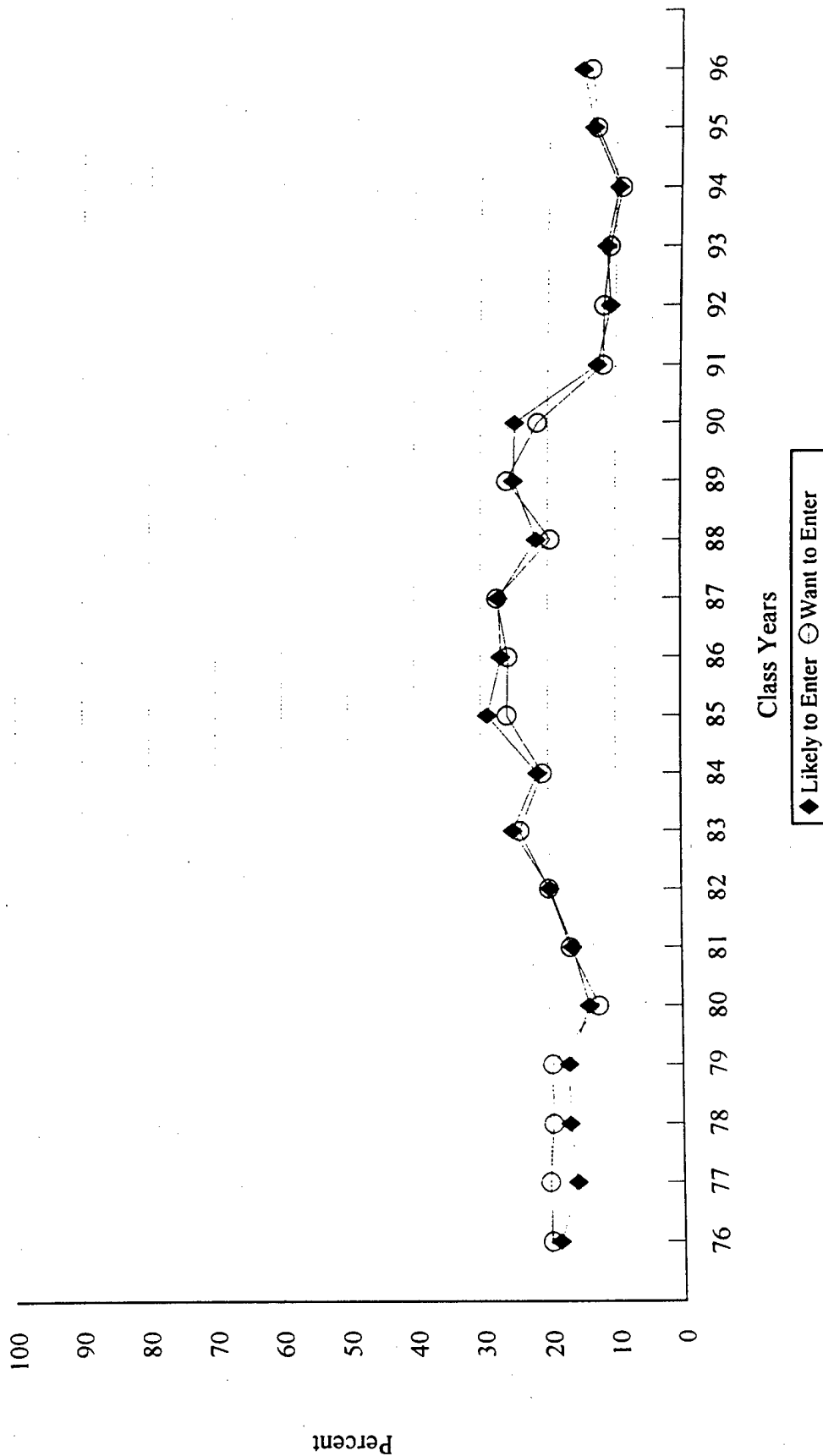


Figure 11
 Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
 "Would Want to Enter" the Armed Forces, 1976-1996
 (White Females))

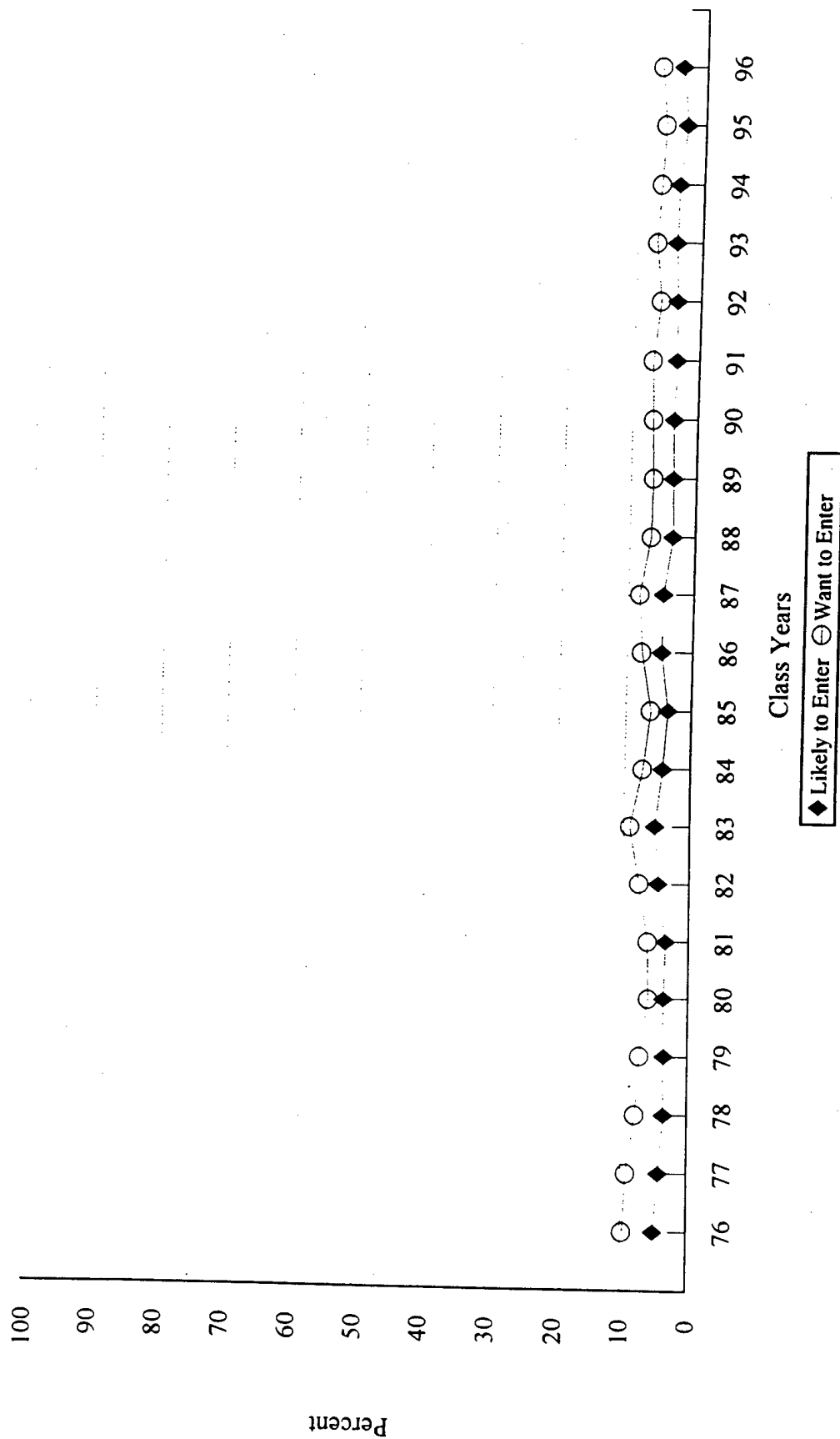


Figure 12
 Comparison of Trends between High School Seniors who are "Likely to Enter" and Seniors who
 "Would Want to Enter" the Armed Forces, 1976-1996
 (Hispanic Females))

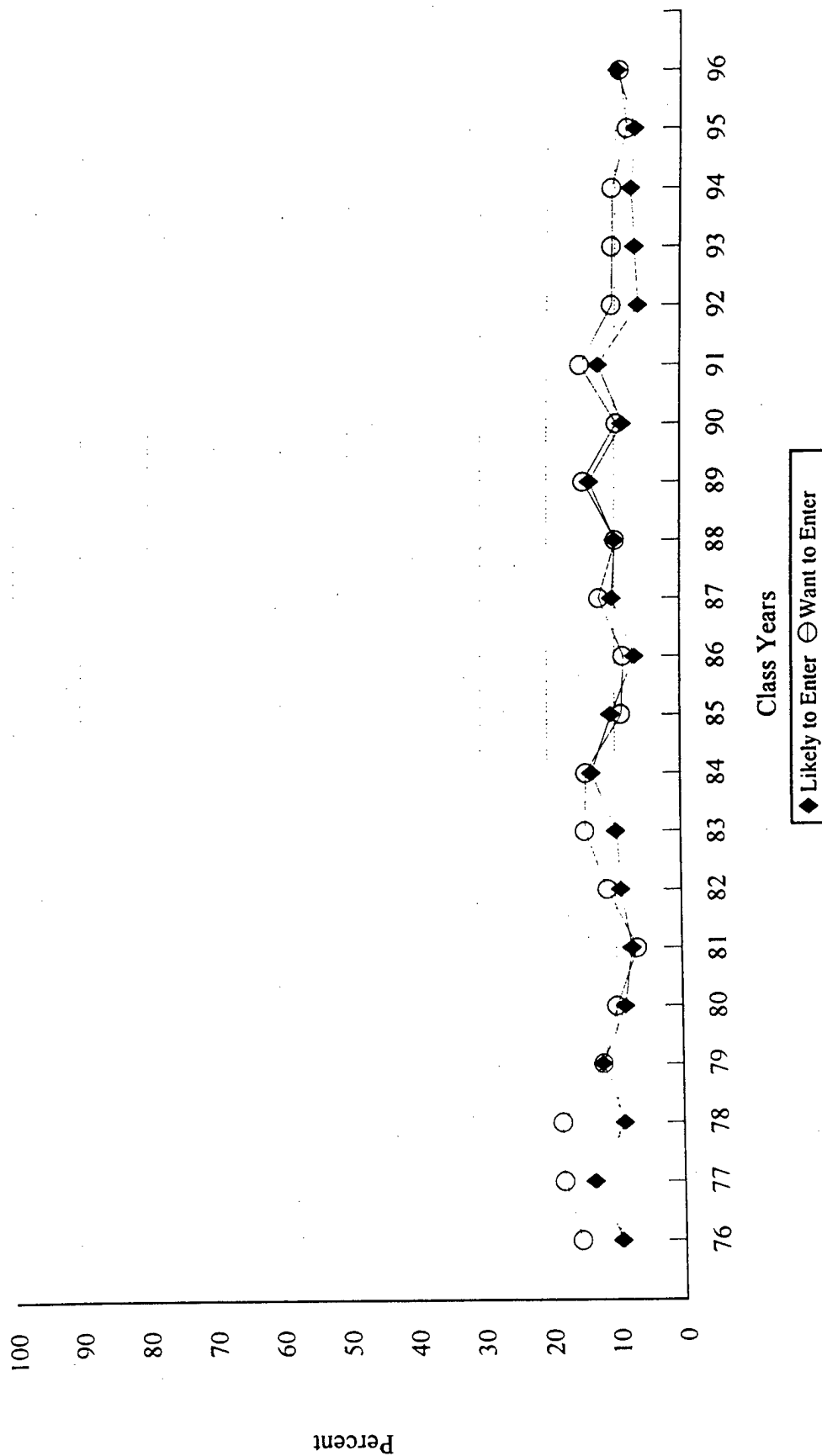


Figure 13

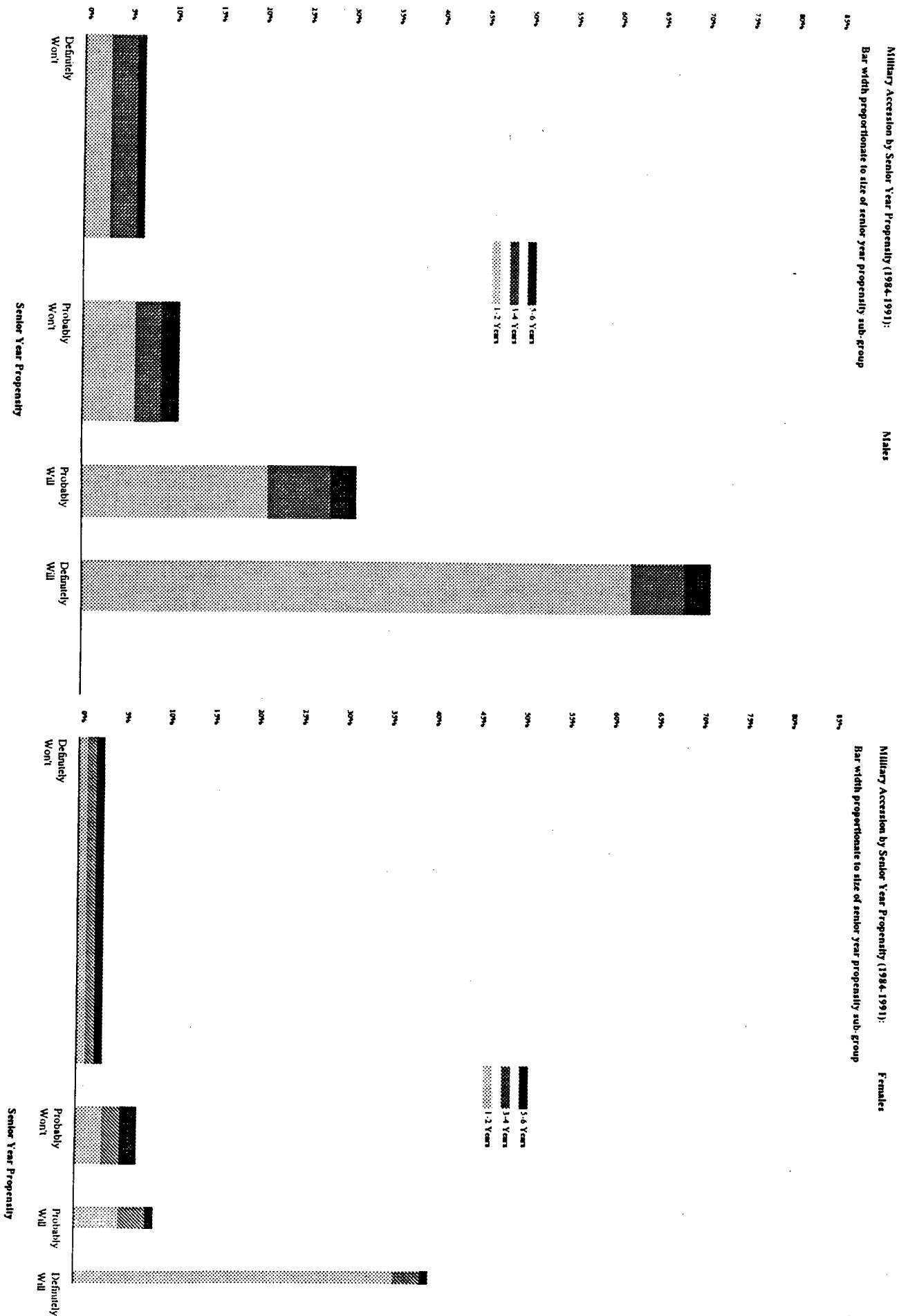
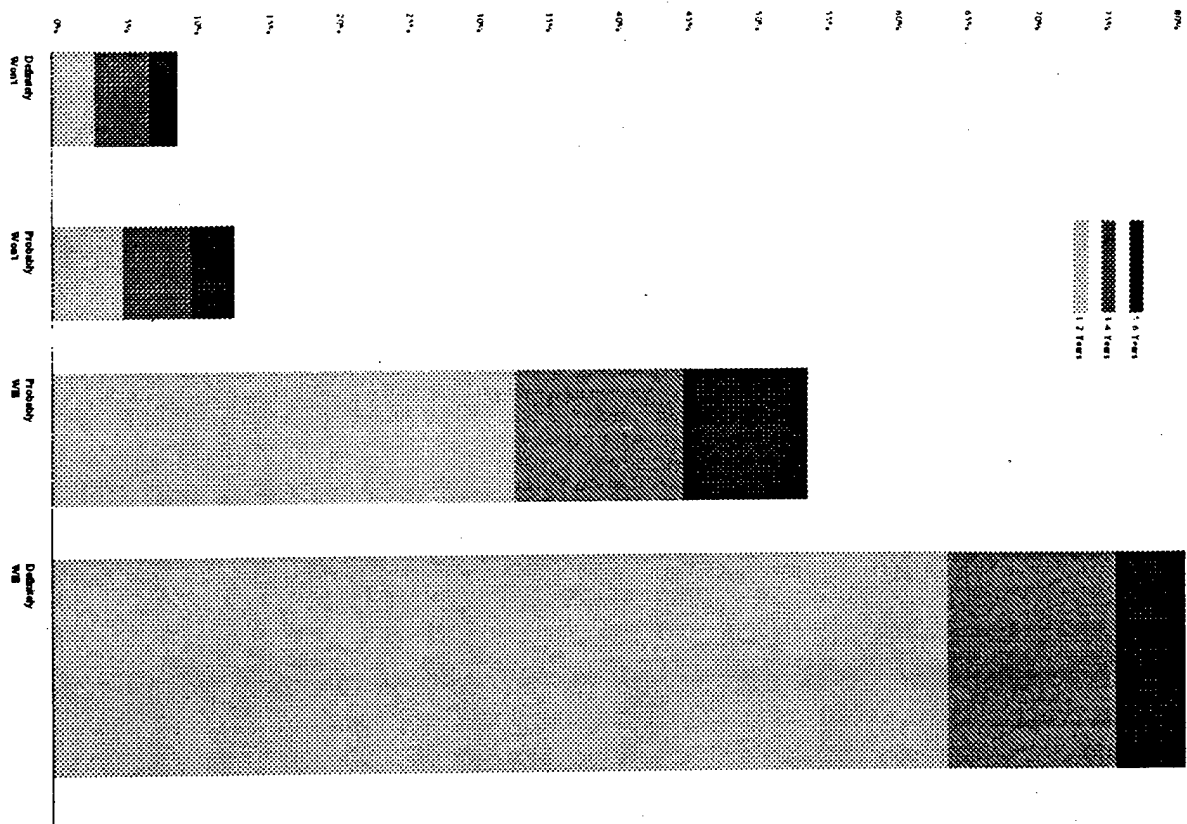
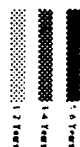


Figure 14

College Entry by Senior Year College Plans (1984-1991):
Bar width proportional to size of senior year college plans sub group

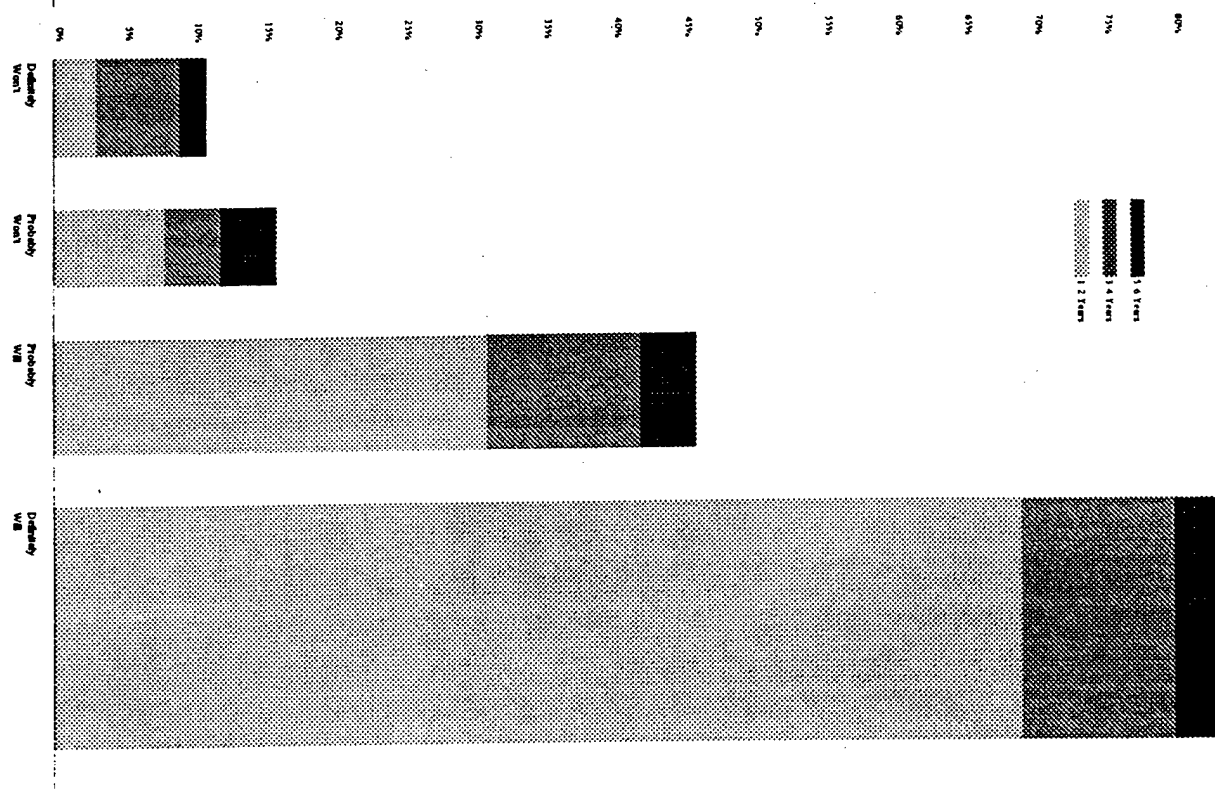
Males



Senior Year College Plans

College Entry by Senior Year College Plans (1984-1991):
Bar width proportional to size of senior year college plans sub group

Females



Senior Year College Plans

Table 1
High School Seniors' Propensity to Enter by Desire to Enter, 1976-1996

Black Males						
Weighted N	14,135					
	Definitely Won't	Probably Won't	Probably Will	Definitely Will	Pearson Correlation	Eta
Don't Want to Enter	38.8%	17.4%	9.9%	3.4%	0.663	0.675
Want to Enter	0.9%	2.9%	12.1%	14.7%		
White Males						
Weighted N	111,163					
	Definitely Won't	Probably Won't	Probably Will	Definitely Will	0.639	0.667
Don't Want to Enter	49.3%	26.6%	4.0%	1.2%		
Want to Enter	1.3%	4.4%	6.1%	7.1%		
Hispanic Males						
Weighted N	8,092					
	Definitely Won't	Probably Won't	Probably Will	Definitely Will	0.611	0.623
Don't Want to Enter	45.0%	20.9%	7.9%	2.2%		
Want to Enter	1.7%	4.2%	9.3%	8.7%		
Black Females						
Weighted N	18,792					
	Definitely Won't	Probably Won't	Probably Will	Definitely Will	0.717	0.731
Don't Want to Enter	64.3%	12.0%	3.3%	0.7%		
Want to Enter	1.8%	3.3%	8.8%	5.8%		
White Females						
Weighted N	118,118					
	Definitely Won't	Probably Won't	Probably Will	Definitely Will	0.57	0.599
Don't Want to Enter	79.3%	12.4%	0.7%	0.2%		
Want to Enter	1.4%	2.9%	2.0%	1.1%		
Hispanic Females						
Weighted N	8,590					
	Definitely Won't	Probably Won't	Probably Will	Definitely Will	0.616	0.626
Don't Want to Enter	73.4%	12.1%	2.5%	0.3%		
Want to Enter	1.8%	3.3%	4.3%	2.2%		

Table 2

Accession into the Armed Forces in the first five or six years after high school by senior year propensity:
 Cumulative proportions by sex, class years 1984 through 1991 combined
 (percentage of total adj. weighted N are shown in parentheses)

MALES

	adj. Weighted N	Cumulative Proportion who Enlisted		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	4063 (48.36%)	0.025 (1.21%)	0.047 (2.27%)	0.056 (2.71%)
Probably Won't	2342 (27.87%)	0.050 (1.39%)	0.080 (2.23%)	0.095 (2.65%)
Probably Will	1011 (12.03%)	0.203 (2.44%)	0.270 (3.25%)	0.292 (3.51%)
Definitely Will	986 (11.73%)	0.612 (7.18%)	0.675 (7.92%)	0.697 (8.18%)
Total adj. weighted N	8402	1027 (12.22%)	1316 (15.67%)	1432 (17.04%)

FEMALES

	adj. Weighted N	Cumulative Proportion who Enlisted		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	7433 (79.56%)	0.007 (0.56%)	0.014 (1.11%)	0.018 (1.43%)
Probably Won't	1245 (13.32%)	0.030 (0.40%)	0.046 (0.61%)	0.057 (0.76%)
Probably Will	434 (4.64%)	0.048 (0.22%)	0.068 (0.32%)	0.072 (0.33%)
Definitely Will	231 (2.48%)	0.358 (0.89%)	0.385 (0.95%)	0.390 (0.97%)
Total adj. weighted N	9343	193 (2.07%)	280 (3.00%)	326 (3.49%)

Table 3

Accession into the Armed Forces through the first five or six years after high school by senior year intentions:
Proportions by Sex and Race (class years 1984 through 1991)

Males

	Whites		Blacks		Hispanics	
	adj. Weighted N and column %	Proportion Entered	adj. Weighted N and column %	Proportion Entered	adj. Weighted N and column %	Proportion Entered
Definitely Won't	3293.7 (51.8%)	0.055	267.39 (31.6%)	0.079	229.58 (40.9%)	0.051
Probably Won't	1828.1 (28.76%)	0.090	179.87 (21.25%)	0.177	142.34 (25.4%)	0.093
Probably Will	600.53 (9.5%)	0.300	190.5 (22.5%)	0.318	105.63 (18.8%)	0.247
Definitely Will	633.64 (9.9%)	0.747	208.5 (24.6%)	0.555	83.671 (14.9%)	0.682
Totals	6355.99	0.157	846.26	0.271	561.23	0.192
Pearson's <i>r</i> eta	0.515 0.571		0.406 0.414		0.498 0.549	

Females

	Whites		Blacks		Hispanics	
	adj. Weighted N and column %	Proportion Entered	adj. Weighted N and column %	Proportion Entered	adj. Weighted N and column %	Proportion Entered
Definitely Won't	5806.4 (82.9%)	0.016	667.33 (64.4%)	0.032	480.97 (72.2%)	0.019
Probably Won't	909 (13%)	0.059	136.52 (13.2%)	0.084	91.446 (13.7%)	0.015
Probably Will	177.44 (2.53%)	0.068	147.91 (14.3%)	0.086	68.251 (10.2%)	0.03
Definitely Will	111.39 (1.6%)	0.456	84.551 (8.2%)	0.309	25.969 (3.9%)	0.49
Totals	7004.28	0.030	1036.31	.084	635.776	0.038
Pearson's <i>r</i> eta	0.269 0.332		0.259 0.297		0.303 0.477	

Table 4

Entry into the College over the first five or six years after high school by senior year propensity:
 Cumulative proportions by sex, class years 1984 through 1991
 (percentage of total adj. weighted N are shown in parentheses)

MALES

	adj. Weighted N	Cumulative Proportion who Entered College			Proportion who earned at least a Bachelor's Degree by 5-6 years after high school
		1-2 years after HS	3-4 years after HS	5-6 years after HS	
Definitely Won't	1552 (17.52%)	0.030 (0.53%)	0.061 (1.06%)	0.079 (1.38%)	0.02 (0.39%)
Probably Won't	1493 (16.85%)	0.049 (0.82%)	0.089 (1.50%)	0.124 (2.09%)	0.033 (0.55%)
Probably Will	2169 (24.48%)	0.322 (7.88%)	0.441 (10.80%)	0.529 (12.94%)	0.204 (5.01%)
Definitely Will	3646 (41.15%)	0.633 (26.05%)	0.753 (30.98%)	0.802 (32.99%)	0.425 (17.5%)
Totals	8860 (100%)	3126 (35.28%)	3928 (44.34%)	4377 (49.41%)	2078 (23.46%)

FEMALES

	adj. Weighted N	Cumulative Proportion who Entered College			Proportion who earned at least a Bachelor's Degree by 5-6 years after high school
		1-2 years after HS	3-4 years after HS	5-6 years after HS	
Definitely Won't	1777 (18.25%)	0.026 (0.47%)	0.075 (1.38%)	0.098 (1.80%)	0.015 (0.27%)
Probably Won't	1395 (14.32%)	0.068 (0.98%)	0.109 (1.57%)	0.154 (2.20%)	0.023 (0.33%)
Probably Will	2082 (21.39%)	0.290 (6.21%)	0.409 (8.75%)	0.452 (9.67%)	0.209 (4.48%)
Definitely Will	4482 (46.03%)	0.668 (30.74%)	0.795 (36.59%)	0.832 (38.30%)	0.481 (22.13%)
Totals	9736 (100%)	3738 (38.39%)	4702 (48.30%)	5060 (51.97%)	2649 (27.21%)

Table 5

Accession into the Military by Senior Year Intention to Join the Military
Measures of Association 1 to 6 years after High School

		Class Years 1976-1983		Class Years 1984-1991	
		Males	Females	Males	Females
1-2 Years	Pearson Correlation	0.435	0.302	0.510	0.302
	Eta	0.519	0.432	0.571	0.386
3-4 Years	Pearson Correlation	0.422	0.294	0.504	0.277
	Eta	0.487	0.401	0.554	0.341
5-6 Years	Pearson Correlation	0.435	0.265	0.500	0.267
	Eta	0.488	0.349	0.546	0.323

Entry into the College by Senior Year Intention to Graduate from a 4 year College
Measures of Association 1 to 6 years after High School

		Class Years 1976-1983		Class Years 1984-1991	
		Males	Females	Males	Females
1-2 Years	Pearson Correlation	0.586	0.589	0.519	0.547
	Eta	0.587	0.604	0.539	0.569
3-4 Years	Pearson Correlation	0.621	0.636	0.574	0.600
	Eta	0.636	0.647	0.591	0.621
5-6 Years	Pearson Correlation	0.631	0.638	0.594	0.607
	Eta	0.645	0.645	0.608	0.625

Table 6

Composition of the Adjusted Follow-up Samples

	Frequency	Percentage	Cumulative Frequency	Cumulative Percentage
Cases with Three Follow-up Observations	16619.08	49.99%	16619.08	49.99%
Cases with Missing Follow-up Values "Forced" to Logical Consisten	4535.12	13.64%	21154.20	63.64%
Cases with Missing Follow-up Values Imputed	12077.61	36.33%	33231.81	99.97%
Cases with no "donor" match forced to "No Accession"	10.12	0.03%	33241.92	100.00%
	<u>33241.92</u>	<u>100.00%</u>		

Table 7

Comparison of Samples: Accession after five or six years by Senior Year Propensity, Class Years 1976-1991

Part A Total Adjusted Sample Follow-up 3					Part B Cases with 3 Observations Only Follow-up 3				
		No Accession	Accession	Total			No Accession	Accession	Total
Definitely Won't	Frequency	19960	680.12	20640	Definitely Won't	Frequency	10604	228.15	10832
	Percent	60.04	2.05	62.09		Percent	63.8	1.37	65.18
	Row Pct	96.7	3.3			Row Pct	97.89	2.11	
	Col Pct	66.64	20.68			Col Pct	68.26	21.03	
Probably Won't	Frequency	7072.2	631.46	7703.7	Probably Won't	Frequency	3771.7	220.3	3992
	Percent	21.27	1.9	23.17		Percent	22.7	1.33	24.02
	Row Pct	91.8	8.2			Row Pct	94.48	5.52	
	Col Pct	23.61	19.2			Col Pct	24.28	20.3	
Probably Will	Frequency	2222.2	682.54	2904.8	Probably Will	Frequency	940.58	212.04	1152.6
	Percent	6.69	2.05	8.74		Percent	5.66	1.28	6.94
	Row Pct	76.5	23.5			Row Pct	81.6	18.4	
	Col Pct	7.42	20.75			Col Pct	6.05	19.54	
Definitely Will	Frequency	698.49	1295.3	1993.8	Definitely Will	Frequency	218.27	424.49	642.77
	Percent	2.1	3.9	6		Percent	1.31	2.55	3.87
	Row Pct	35.03	64.97			Row Pct	33.96	66.04	
	Col Pct	2.33	39.38			Col Pct	1.41	39.12	
Total	Frequency	29952.5	3289.45	33241.9	Total	Frequency	15534.1	1084.99	16619.1
	Percent	90.1	9.9	100		Percent	93.47	6.53	100
	Cramer's V		0.503			Cramer's V		0.512	
	Pearson Correla		0.452			Pearson Correlatio		0.427	
	eta		0.503			eta		0.512	
Part C Cases with One or more Missing Observations Forced for Logical Reasons Follow-up 3					Part D Cases with One or more Missing Observations Imputed Follow-up 3				
		No Accession	Accession	Total			No Accession	Accession	Total
Definitely Won't	Frequency	2235.6	257.11	2492.7	Definitely Won't	Frequency	7120.5	190.09	7310.5
	Percent	49.27	5.67	54.94		Percent	58.96	1.57	60.53
	Row Pct	89.69	10.31			Row Pct	97.4	2.6	
	Col Pct	63.45	25.35			Col Pct	65.35	16.08	
Probably Won't	Frequency	897.18	168.8	1066	Probably Won't	Frequency	2403.3	239.59	2642.9
	Percent	19.77	3.72	23.49		Percent	19.9	1.98	21.88
	Row Pct	84.16	15.84			Row Pct	90.93	9.07	
	Col Pct	25.47	16.64			Col Pct	22.06	20.26	
Probably Will	Frequency	280.93	211.83	492.77	Probably Will	Frequency	1000.7	258.32	1259
	Percent	6.19	4.67	10.86		Percent	8.29	2.14	10.42
	Row Pct	57.01	42.99			Row Pct	79.48	20.52	
	Col Pct	7.97	20.89			Col Pct	9.18	21.85	
Definitely Will	Frequency	109.42	376.5	485.91	Definitely Will	Frequency	370.8	494.35	865.15
	Percent	2.41	8.3	10.71		Percent	3.07	4.09	7.16
	Row Pct	22.52	77.48			Row Pct	42.86	57.14	
	Col Pct	3.11	37.12			Col Pct	3.4	41.81	
Total	Frequency	3523.12	1014.24	4537.36	Total	Frequency	10895.3	1182.35	12077.6
	Percent	77.65	22.35	100		Percent	90.21	9.79	100
	Cramer's V		0.516			Cramer's V		0.481	
	Pearson Correla		0.488			Pearson Correlatio		0.443	
	eta		0.516			eta		0.481	

Table 8

**Comparison of Samples:
Senior Year Propensity to Join the Military**

Class Years 1976-1991	Follow-up sample		Total Adjusted	
	including only cases with 3 observations	Sample	Follow-up Sample	BY Sample
Definitely Won't	65.18%		62.09%	61.70%
Probably Won't	24.02%		23.17%	23.80%
Probably Will	6.94%		8.74%	8.60%
Definitely Will	3.87%		6.00%	5.90%

Table 9

Non-Prior Service Accessions as a Percentage of High School Graduates

	Non-Prior Service Accessions	High School Graduates	Percentage
1980-1983	1,298,292	11,946,000	10.87%
1984-1987	1,223,860	9,721,000	12.59%
1988-1991	974,964	9,514,000	10.25%
Total	3,497,116	31,181,000	11.20%

Table 10

Accession into the Armed Forces over the first six years after high school by senior year propensity:
 Cumulative proportions by sex, class years 1976 through 1979
 (percentage of total adj. weighted N are shown in parentheses)

MALES

	adj. Weighted N	Accessions: Cumulative Proportions		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	1614 (44.72%)	0.033 (1.47%)	0.0511 (2.28%)	0.0704 (3.15%)
Probably Won't	1260 (34.91%)	0.0412 (1.44%)	0.0695 (2.43%)	0.0988 (3.45%)
Probably Will	465 (12.90%)	0.1763 (2.27%)	0.237 (3.06%)	0.2898 (3.74%)
Definitely Will	269 (7.46%)	0.6267 (4.68%)	0.6593 (4.92%)	0.6928 (5.17%)
Total adj. weighted N	3609	356 (9.86%)	458 (12.69%)	560 (15.51%)
Pearson Correlation		0.431	0.417	0.407
eta		0.527	0.489	0.464

FEMALES

	adj. Weighted N	Cumulative Proportion who Enlisted		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	2991 (74.77%)	0.0046 (0.34%)	0.0083 (0.62%)	0.0164 (1.23%)
Probably Won't	748 (18.71%)	0.0155 (0.29%)	0.0265 (0.50%)	0.0337 (0.63%)
Probably Will	194 (4.85%)	0.0953 (0.46%)	0.1046 (0.51%)	0.1182 (0.57%)
Definitely Will	67 (1.67%)	0.2761 (0.46%)	0.3193 (0.53%)	0.3428 (0.57%)
Total adj. weighted N	4000	62 (1.55%)	86 (2.16%)	120 (3.00%)
Pearson Correlation		0.26	0.254	0.225
eta		0.317	0.304	0.272

Table 11

Accession into the Armed Forces over the first six years after high school by senior year propensity:
 Cumulative proportions by sex, class years 1980 through 1983
 (percentage of total adj. weighted N are shown in parentheses)

MALES

	adj. Weighted N	Accessions: Cumulative Proportions		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	1502 (40.29%)	0.0267 (1.08%)	0.0551 (2.22%)	0.0669 (2.70%)
Probably Won't	1302 (34.93%)	0.0522 (1.82%)	0.0899 (3.14%)	0.1187 (4.15%)
Probably Will	573 (15.38%)	0.1694 (2.60%)	0.2394 (3.68%)	0.3025 (4.65%)
Definitely Will	350 (9.40%)	0.5867 (5.51%)	0.6558 (6.16%)	0.744 (6.99%)
Total adj. weighted N	3727	410 (11.01%)	567 (15.20%)	689 (18.49%)
Pearson Correlation		0.438	0.425	0.456
eta		0.514	0.484	0.506

FEMALES

	adj. Weighted N	Cumulative Proportion who Enlisted		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	3003 (73.55%)	0.0067 (0.49%)	0.012 (0.88%)	0.0187 (1.38%)
Probably Won't	785 (19.22%)	0.0067 (0.13%)	0.0171 (0.33%)	0.0353 (0.68%)
Probably Will	210 (5.15%)	0.0429 (0.22%)	0.0742 (0.38%)	0.0898 (0.46%)
Definitely Will	85 (2.08%)	0.5241 (1.09%)	0.5644 (1.17%)	0.5644 (1.17%)
Total adj. weighted N	4083	79 (1.93%)	113 (2.76%)	151 (3.69%)
Pearson Correlation		0.338	0.327	0.298
eta		0.538	0.484	0.417

Table 12

Accession into the Armed Forces over the first six years after high school by senior year propensity:
 Cumulative proportions by sex, class years 1984 through 1987
 (percentage of total adj. weighted N are shown in parentheses)

MALES

	adj. Weighted N	Accessions: Cumulative Proportions		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	1686 (42.68%)	0.0319 (1.36%)	0.0545 (2.33%)	0.0675 (2.88%)
Probably Won't	1259 (31.87%)	0.0469 (1.49%)	0.0756 (2.41%)	0.0952 (3.03%)
Probably Will	534 (13.51%)	0.2003 (2.71%)	0.295 (3.99%)	0.3268 (4.41%)
Definitely Will	472 (11.94%)	0.622 (7.43%)	0.6867 (8.20%)	0.7203 (8.60%)
Total adj. weighted N	3951	513 (12.99%)	669 (16.93%)	748 (18.92%)
Pearson Correlation		0.493	0.497	0.495
eta		0.563	0.55	0.544

FEMALES

	adj. Weighted N	Cumulative Proportion who Enlisted		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	3471 (77.24%)	0.0069 (0.53%)	0.0138 (1.07%)	0.0186 (1.44%)
Probably Won't	673 (14.97%)	0.0201 (0.30%)	0.0298 (0.45%)	0.0372 (0.56%)
Probably Will	231 (5.13%)	0.0252 (0.13%)	0.0549 (0.28%)	0.0607 (0.31%)
Definitely Will	120 (2.66%)	0.379 (1.01%)	0.3895 (1.04%)	0.3993 (1.06%)
Total adj. weighted N	4494	89 (1.97%)	128 (2.84%)	151 (3.37%)
Pearson Correlation		0.303	0.275	0.259
eta		0.429	0.365	0.34

Table 13

Accession into the Armed Forces over the first six years after high school by senior year propensity:
 Cumulative proportions by sex, class years 1988 through 1991
 (percentage of total adj. weighted N are shown in parentheses)

MALES

	adj. Weighted N	Accessions: Cumulative Proportions		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't	2376 (53.40%)	0.0204 (1.09%)	0.0421 (2.25%)	0.0482 (2.57%)
Probably Won't	1083 (24.33%)	0.0535 (1.30%)	0.0844 (2.05%)	0.0953 (2.32%)
Probably Will	477 (10.72%)	0.2052 (2.20%)	0.243 (2.61%)	0.2548 (2.73%)
Definitely Will	514 (11.55%)	0.6036 (6.97%)	0.6642 (7.67%)	0.6746 (7.79%)
Total adj. weighted N	4450 (100.00%)	514 (11.56%)	649 (14.58%)	686 (15.41%)
Pearson Correlation		0.525	0.509	0.503
eta		0.578	0.557	0.548

FEMALES

	adj. Weighted N	Cumulative Proportion who Enlisted		
		1-2 years after HS	3-4 years after HS	5-6 years after HS
Definitely Won't 100	3962 (81.71%)	0.0071 (0.58%)	0.0149 (1.22%)	0.0167 (1.37%)
Probably Won't	572 (11.79%)	0.0422 (0.50%)	0.0644 (0.76%)	0.0804 (0.95%)
Probably Will	203 (4.19%)	0.0729 (0.31%)	0.083 (0.35%)	0.0849 (0.36%)
Definitely Will	112 (2.31%)	0.3362 (0.78%)	0.3791 (0.87%)	0.3791 (0.87%)
Total adj. weighted N	4849	105 (2.17%)	155 (3.20%)	172 (3.55%)
Pearson Correlation		0.303	0.282	0.277
eta		0.352	0.324	0.313

Table 14

Correlations between senior year propensity to enlist and actual accession after high school by sex for four class year groupings

Males

	Class Years Weighted N:	76-79 3608	80-83 3727	84-87 3950	88-91 4450
1 to 2 years after high school		0.431	0.438	0.493***	0.525
3 to 4 years after high school		0.417	0.425	0.497***	0.509
5 to 6 years after high school		0.407	0.456*	0.495*	0.503

Females

	Class Years Weighted N:	76-79 4000	80-83 4083	84-87 4494	88-91 4848
1 to 2 years after high school		0.26	0.338***	0.303	0.303
3 to 4 years after high school		0.25	0.327***	0.275*	0.282
5 to 6 years after high school		0.225	0.298***	0.259	0.277

* indicates that the correlation is significantly different from the previous class year correlation $p < .05$ *** indicates that the correlation is significantly different from the previous class year correlation $p < .001$

Table 15

**Trends in Time of Accession into the Armed Forces
(Males and Females)**

	Class Years			
	1976-1979	1980-1983	1984-1987	1988-1991
Males				
% of all Accessions by 1 to 2 years after high school	63.6%	59.5%	68.6%	74.9%
% of all Accessions by 3 to 4 years after high school	81.8%	82.3%	89.8%	94.6%
Females				
% of all Accessions by 1 to 2 years after high school	51.7%	52.3%	58.9%	61.0%
% of all Accessions by 3 to 4 years after high school	71.7%	74.8%	84.8%	90.1%